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# THE FARM INDEX

ECONOMIC RESEARCH SERVICE ■ U.S. DEPARTMENT OF AGRICULTURE ■ OCTOBER 1965

ALSO IN THIS ISSUE:

LABOR MARKET FAILING TO MEET JOB NEEDS

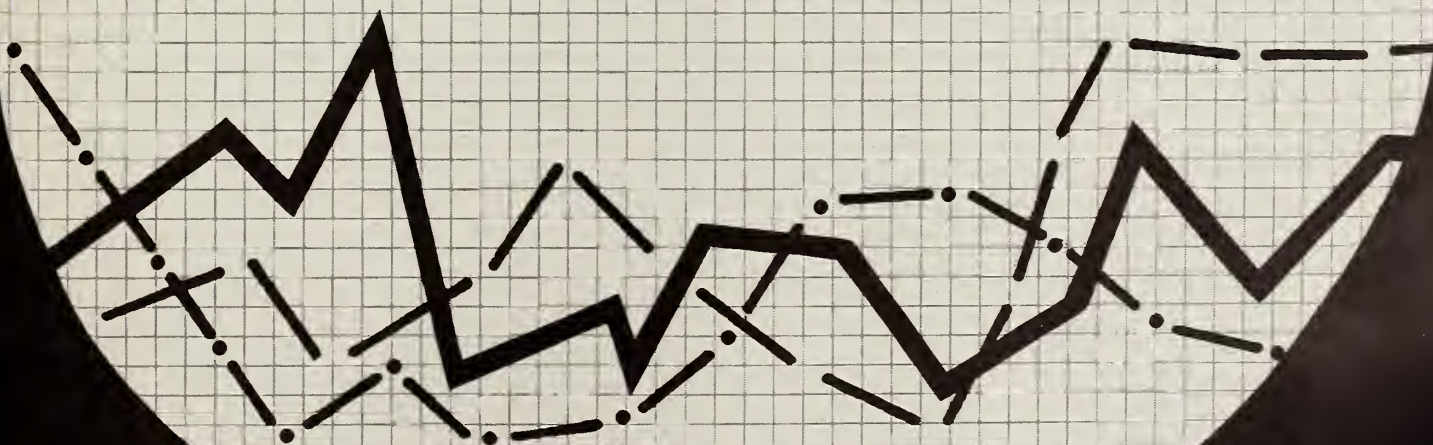
FINDING THE FROZEN ASSETS

NATIONS THAT LEAD THE WAY

PLUS

SPECIAL GRAIN SUPPLEMENT

FORMULA FEEDS: SALES BY SEASON







# economic trends

ITEM	UNIT OR BASE PERIOD	'57-'59 AVERAGE	1964		1965		
			YEAR	AUGUST	JUNE	JULY	AUGUST
Prices:							
Prices received by farmers	1910-14 = 100	242	236	232	256	253	250
Crops	1910-14 = 100	223	238	226	243	236	224
Livestock and products	1910-14 = 100	258	235	238	266	269	272
Prices paid, interest, taxes and wage rates	1910-14 = 100	293	313	313	323	323	321
Family living items	1910-14 = 100	286	300	300	307	307	305
Production items	1910-14 = 100	262	270	268	278	278	277
Parity ratio		83	76	74	79	78	78
Wholesale prices, all commodities	1957-59 = 100	—	100.5	100.3	102.8	102.9	102.9
Commodities other than farm and food	1957-59 = 100	—	101.2	101.1	102.5	102.5	102.6
Farm products	1957-59 = 100	—	94.3	93.6	100.3	100.0	99.1
Food, processed	1957-59 = 100	—	101.0	101.0	106.1	106.6	106.7
Consumer price index, all items	1957-59 = 100	—	108.1	108.2	110.1	110.2	—
Food	1957-59 = 100	—	106.4	106.9	110.1	110.9	—
Farm Food Market Basket: <sup>1</sup>							
Retail cost	Dollars	983	1,015	1,021	1,063	1,072	—
Farm value	Dollars	388	373	383	424	423	—
Farm-retail spread	Dollars	595	642	638	639	649	—
Farmers' share of retail cost	Per cent	39	37	38	40	39	—
Farm Income:							
Volume of farm marketings	1957-59 = 100	—	118	117	105	113	123
Cash receipts from farm marketings	Million dollars	32,247	36,899	2,947	2,896	3,046	3,300
Crops	Million dollars	13,766	17,135	1,305	1,106	1,297	1,400
Livestock and products	Million dollars	18,481	19,764	1,642	1,790	1,749	1,900
Realized gross income <sup>2</sup>	Billion dollars	—	42.2	—	45.0	—	—
Farm production expenses <sup>2</sup>	Billion dollars	—	29.3	—	30.0	—	—
Realized net income <sup>2</sup>	Billion dollars	—	12.9	—	15.0	—	—
Agricultural Trade:							
Agricultural exports	Million dollars	4,105	6,347	419	531	548	—
Agricultural imports	Million dollars	3,977	4,082	315	345	261	—
Land Values:							
Average value per acre	1957-59 = 100	—	—	135 <sup>3</sup>	139 <sup>4</sup>	—	—
Total value of farm real estate	Billion dollars	—	—	154.9 <sup>3</sup>	159.4 <sup>4</sup>	—	—
Gross National Product <sup>2</sup>							
Consumption <sup>2</sup>	Billion dollars	457.3	628.7	624.2	665.9	—	—
Investment <sup>2</sup>	Billion dollars	294.2	398.9	396.0	424.4	—	—
Government expenditures <sup>2</sup>	Billion dollars	68.0	92.9	90.9	101.1	—	—
Net exports <sup>2</sup>	Billion dollars	92.4	128.4	129.7	132.9	—	—
	Billion dollars	2.7	8.6	7.7	7.5	—	—
Income and Spending: <sup>5</sup>							
Personal income, annual rate	Billion dollars	365.3	495.0	499.5	528.8	530.5	531.6
Total retail sales, monthly rate	Million dollars	17,105	21,802	22,266	23,331	23,765	23,519
Retail sales of food group, monthly rate	Million dollars	4,159	5,183	5,234	5,489	5,502	—
Employment and Wages: <sup>5</sup>							
Total civilian employment	Millions	64.9	70.4	70.5	72.1	72.8	72.4
Agricultural	Millions	6.0	4.8	4.8	4.7	4.7	4.6
Rate of unemployment	Per cent	5.5	5.2	5.1	4.7	4.5	4.5
Workweek in manufacturing	Hours	39.8	40.7	40.8	41.0	40.9	40.9
Hourly earnings in manufacturing, unadjusted	Dollars	2.12	2.53	2.52	2.62	2.61	2.60
Industrial Production <sup>5</sup>	1957-59 = 100	—	132	134	143	144	144
Manufacturers' Shipments and Inventories: <sup>5</sup>							
Total shipments, monthly rate	Million dollars	28,745	37,129	37,168	39,943	41,314	—
Total inventories, book value end of month	Million dollars	51,549	62,944	60,673	64,625	65,330	—
Total new orders, monthly rate	Million dollars	28,365	37,697	37,509	40,689	41,632	—

<sup>1</sup> Average annual quantities of farm food products purchased by urban wage-earner and clerical-worker households (including those of single workers living alone) in 1960-61—estimated monthly. <sup>2</sup> Annual rates seasonally adjusted second quarter. <sup>3</sup> As of July 1. <sup>4</sup> As of March 1. <sup>5</sup> Seasonally adjusted.

Sources: U.S. Dept. of Agriculture (Farm Income Situation, Marketing and Transportation Situation, Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Industry Survey, Business News Reports, Advance Retail Sales Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale Price Index).

The record crop output that is virtually assured this year continues a 20-year upward trend.

And a persistent trend it has been—agriculture's increasing ability to produce more per acre. Last year drought in many areas held the index number of U.S. crop yields (28 crops) to 114. Still this figure was above any previous year except 1963. Consider these index numbers of U.S. crop yields since 1955:

Year	1957-59 = 100
1955	87
1956	92
1957	94
1958	105
1959	101
1960	105
1961	109
1962	112
1963	116
1964	114
1965 <sup>1</sup>	123

<sup>1</sup> September 1 indications.

The uptrend in yields has been due mainly to the increasing adoption of agricultural technology. Farmers are using improved varieties of seeds and are speeding their plantings using better equipment. They are fertilizing and cultivating their crops with greater skill. They are fighting plant pests and disease more effectively. And with fast, efficient harvesters they are bringing in bigger crops.

Here are some examples of the resulting yield increases:

—Wheat yields in 1957-59 averaged just under 24 bushels per acre. September 1 estimates put the figure at 27.2 for 1965.

—Cotton yields, 438 pounds per acre in 1957-59, are put at a record-high 532 pounds this year.

—Corn yields have risen from 51.4 bushels per acre in 1957-59 to an estimated 72.4 bushels.

With such yield gains, it is hardly surprising that output has also increased despite a net 23-million acre decline from 1957-59 to 1964 in land used for crops.

Probably the most striking acreage reduction since 1957-59 has been in feed grains, due mainly to the Feed Grain Program. Acreage for harvest this year, at 99½ million acres, is down 30 million from 1957-59. Nevertheless, 1965 feed grain production was estimated September 1 at 160 million tons, up from 142 million in 1957-59.

It has been the same story for many other crops; the index of total crop output reads 117 this year (1957-59 = 100). It is a record high. Other recent output records were set in 1963, 1960 and 1958.

This expanded output has been accompanied by growing markets for farm products. Domestic use of food products has gone up 10 per cent since 1957-59. There are over 20 million more people in the United States now and consumer buying power has continued to grow. Agricultural exports—now at a rate of \$6.1 billion per year—have risen sharply since 1957-59, reflecting increased commercial sales for dollars and continued Food-for-Peace programs.

Stocks of several major commodities have been worked down. For example, the feed grain carryover into the 1965/66 marketing year has been put at 54 million short tons. That compares with an average carryover of nearly 70 million tons in 1957-59 and a peak of nearly 85 million in 1960. Wheat stocks have also been trimmed. They are down to about 820 million bushels from 1,411 million bushels in 1961 and over a billion bushels in 1957-59.

The cotton carryover has been an exception. It has grown from a 1957-59 average of less

# the agricultural outlook



than 9 million bales to more than 14 million.

One of the crops making the biggest production gain in recent years is soybeans. This crop, unlike most, has experienced a sharp increase in acreage since 1957-59. Harvested acreage for 1965 is put at 34.7 million acres, up more than 12 million since 1957-59. Production is expected to reach 867 million bushels, representing a gain of about 225 million bushels since 1957-59.

Yet there has been virtually no carryover problem with soybeans because domestic use and exports have kept pace with production. Carryover stocks into the 1965/66 marketing year, which began September 1, were expected to be at a minimal level. Even with the record production this year, expanded domestic use and exports will not leave excessive stocks next September 1.

#### **Fewer Layers:**

On September 1, potential layers totaled 374 million, down 4 per cent from a year earlier. However, laying flocks during the next few months may average only about 2 per cent smaller because farmers likely will keep their older birds in production longer.

Egg production may be down even less because of the likely continuation of the up-trend in the rate of lay.

#### **More Turkeys:**

Turkey producers this year are raising an estimated 103.7 million turkeys, up from 99.7 million last year. Because of a late hatch this year, most of the increased production will be marketed during September-December. Ready-to-cook production for this period may go 60 to 80 million pounds above a year earlier.

The larger supplies and improved demand are likely to result in prices close to the 21.2 cents a pound received by producers in September-December last year.

#### **Fewer Milk Cows:**

Milk cow numbers are continuing to decline. The decrease this year is put at 3.2 per cent, based on a June count of 15.6 million. The percentage decline is sharper than the average of 2.9 per cent for last year and the past decade.

The decrease is related to the continuing decline in the number of farms keeping milk cows. Gains in livestock prices during the past year probably encouraged the sale of dairy stock. And poor dairy pasture and forage conditions in many areas during the past three years undoubtedly stimulated the decline this year.

Pronounced shifts from dairying have been occurring for a number of years in the Midwest where conditions have been generally favorable for grain and livestock production. Midwestern dairy farmers, more readily than in other areas, shift to these alternatives when milk prices decline in relation to the other products.

In the Northeast a lack of attractive farm alternatives to dairying has tended to limit declines in milk cow numbers. However, continued drought and higher production costs are helping to speed the decline this year.

In the Lake States, also with limited alternatives, dairy prices have improved more than in other areas; increased population has enabled producers to sell more of their milk for use in higher-valued products.

#### **More Cigarettes and Smokers:**

Cigarette output in 1965 is put at a record 565 billion, up 25 billion from last year.

U.S. smokers will likely account for 536 billion cigarettes—also a record—for a 5 per cent gain from last year. Exports will account for most of the remaining output.

The gain in U.S. consumption this year largely reflects a significant increase in smoking-age brackets and the apparent resumption of cigarette use by some who had quit or had switched to other tobacco products after the report on smoking and health early last year.

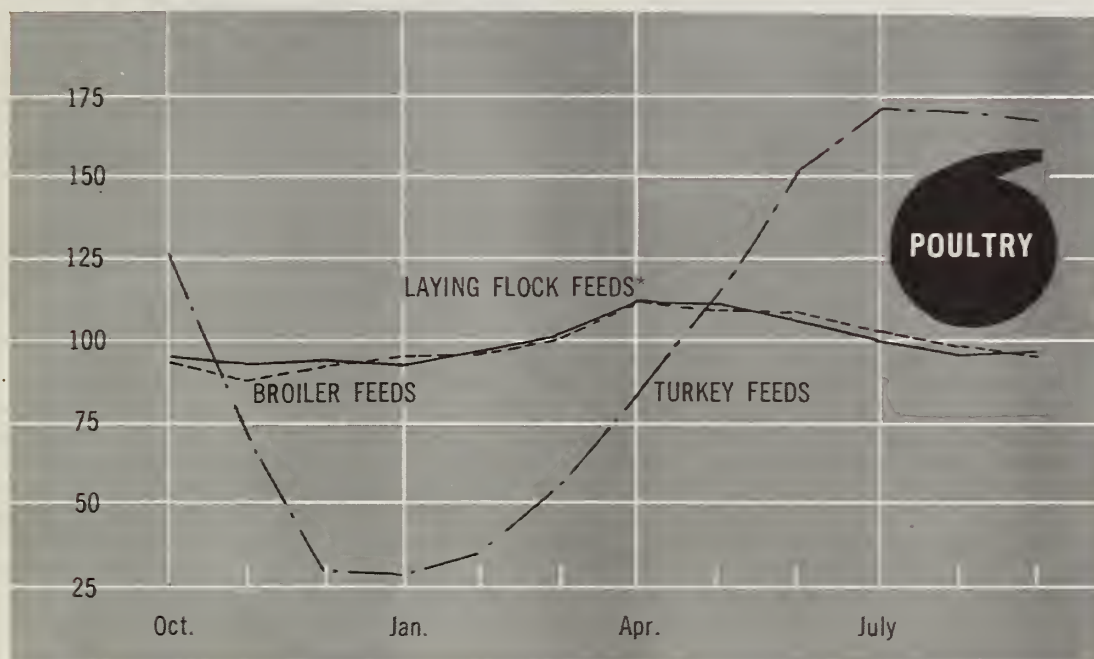
Cigarette smoking per capita (18 years and older) this year is also likely to be above 1964. The figure, estimated at 216 packs, represents a 3 per cent rise from 1964 but is slightly below the 1963 level. Consumption per smoker is greater since the per capita figure includes non-smokers.



# FORMULA FEEDS: SALES BY SEASON

*Ups and downs in feed output follow the seasonal nature of livestock marketing. The smallest swing occurs for hog rations; greatest for turkey, beef and sheep feeds.*

PER CENT OF ANNUAL AVERAGE FEED PRODUCTION

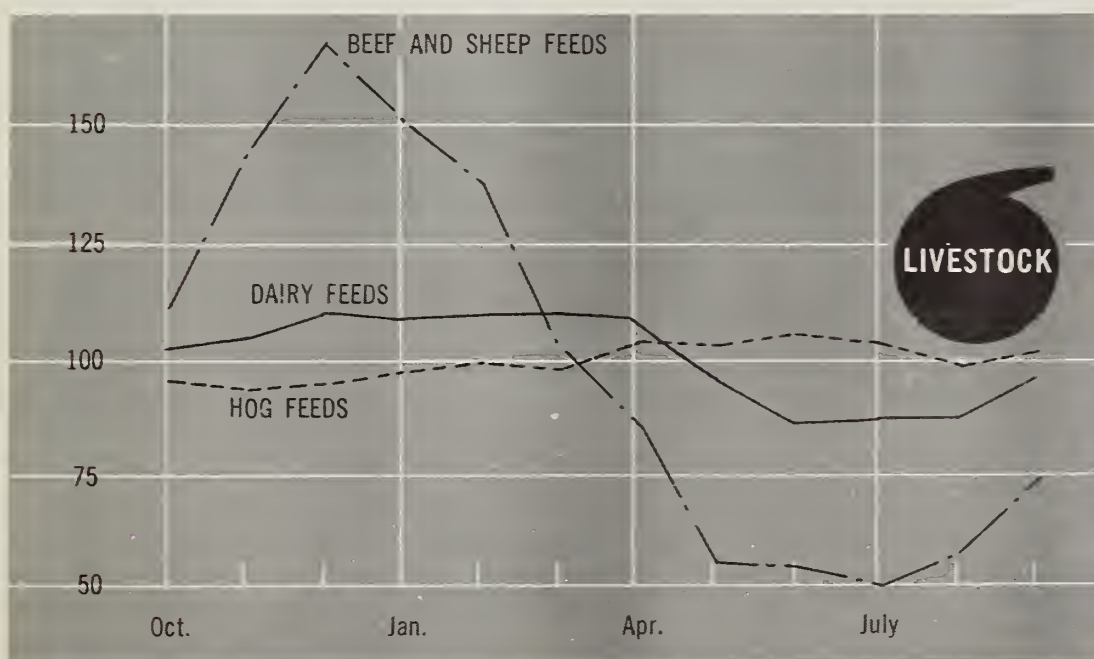


Based on commercial feed production data of the American Feed Manufacturers Association for 1952-59.  
\*Includes starter-grower feeds for flock replacement.

U. S. DEPARTMENT OF AGRICULTURE

NEG. ERS 3894-65(8)

PER CENT OF ANNUAL AVERAGE FEED PRODUCTION



Based on commercial feed production data of the American Feed Manufacturers Association for 1948-59.

U. S. DEPARTMENT OF AGRICULTURE

NEG. ERS 3895-65(8)

Any livestock or poultry producer is well aware that his job has its "ups and downs" during the year. Despite the trend to an assembly-line type of farm production, seasonal patterns still exist in breeding and feeding of livestock and poultry.

Weather changes during the year also influence commercial feed requirements through their effect on the availability of forages and homegrown grain.

Feed supplies must match the needs of producers at any given time so manufacturers of prepared feeds have highs and lows in their output, too.

Using data gathered by the American Feed Manufacturers Association during 1948-59, ERS researchers mapped the seasonal patterns in commercial feed production. They found the greatest seasonal variation in monthly output of turkey, beef and sheep feeds. The least change was in hog rations.

The ups and downs in production of turkey feed were greater than those for other kinds of poultry feed. During 1952-59, the period used for figuring seasonal variation in poultry feeds, turkey feed output rose in the first half of the year, reaching a high in July of about 70 per cent above the annual average. Then it dropped sharply in the fall when most of the birds went to market prior to the holiday season. The low point was reached in January at only 30 per cent of the seasonal average.

In contrast to turkey feed output, broiler feed production was more evenly distributed throughout the year. Output of broiler feeds ranged from 12 to 14 per cent above average during April-June to 12 per cent below average in November.

The production of feeds for laying flocks followed a pattern similar to that of broiler rations. The seasonal high—14 per cent above the annual average—occurred in April and May when the greatest



number of hens were on hand and young chickens were being raised for flock replacements. The seasonal low—8 per cent below average—took place in November when the old hens had been culled out.

Production of beef and sheep feeds, based on data for 1948-59, was heaviest in the fall and winter when cattle feeding was at a seasonal high and pastures poor or nonexistent. It was lightest in the spring and summer when new forage was available. Beef and sheep feed output normally hit a peak in December—nearly 70 per cent above the annual average—and then dropped rapidly to a low of 50 per cent in July.

The seasonal pattern for dairy feed output was similar to that of beef cattle feed except that the seasonal swing was more moderate. Peak production of dairy rations occurred in December-April and was 10 to 15 per cent above the annual average. Production then declined seasonally and was 17 to 18 per cent below the annual average in June-August.

The period of heaviest hog feeding was April-July when the spring pig crop was being fed for market. The fall pig crop wasn't as large so feed output during October-March tended to be a little below the annual average.

The seasonal changes in total prepared feed production were less pronounced than those for most individual feeds. This was largely because the variations in hog and poultry feed output offset much of the seasonality in production of dairy and beef feeds. The peak for all prepared feed was April with output 8 per cent higher than the annual average, and the low—6 per cent below average—occurred in August.

In some cases, the seasonal patterns also indicated some regularity. In seven of 10 years, the peak for turkey feed was reached in July or August, the low in December or January. (1)

## Production Line Swings to Big Birds As Farmers Speed Growth, Cut Feed

In the early '50s it took three months and 10 pounds of feed to produce a three and a half pound broiler under experimental conditions.

New experiments show that it takes only two months and about seven and a half pounds of feed to produce the same size broiler.

The experiments are milestones in the technological revolution in the broiler industry. But the miles aren't so far apart these days.

And the technological gap between laboratory and farm is becoming a thing of the past. Today, many a commercial producer can match or surpass experimental achievements.

The ratio of broiler prices to feed prices is currently much lower than a decade ago. But the producer, operating in an entirely different cost structure, has been able to continue expanding output. Ten years earlier such price relations would have spelled disaster for the industry.

The average marketing weight for broilers rose from 3.1 pounds in 1955 to 3.5 pounds last year. One reason for this is that the new production technology substantially lessened the feed cost disadvantage of heavier broilers.

Processing costs are another reason. It costs about as much to process a heavy broiler as a light one. But the cost per pound is noticeably less. (2)

## Beef Returns in Louisiana Rice Area Are Important, But Could Be Higher

In southwestern Louisiana, rice is easily the leading cash crop. But, the control of weeds and other undesirable plants in the rice fields necessitates letting at least half of the available cropland lie idle each year. Most growers supplement their incomes by grazing a beef herd on their idle land. Re-

ceipts from beef cattle production account for roughly a third of gross farm income in southwestern Louisiana.

However, the management of many of the beef herds often leaves something to be desired. Calving rates and beef output per cow are low in comparison with what they could be with more attention given the herds and the forages grown for their use. As a result, average returns per acre for beef are low. Merely increasing the calving rate 15 percent would result in a 167 percent higher return per acre.

ERS researchers, in cooperation with the Louisiana Agricultural Experiment Station, have considered the possibilities of improving forage crops and increasing the income from beef in southwestern Louisiana. Using a 25-cow herd for their analysis, they found that with calf prices at \$24 per hundredweight (cwt.) and cow prices at \$18 per cwt., the highest returns of \$14 per acre could be obtained with fescue and clover in a six-year rotation (two years of rice, four years of pasture). At present, a number of rice farms in the area have average beef returns of less than \$4 per acre.

At the same price levels for beef, a native grass and supplementary winter pasture rotation made \$10 an acre, a two-year Bermuda grass-clover rotation returned \$7 an acre and a three-year native grass rotation averaged \$6 an acre.

When prices were dropped to \$20 per cwt. for calves and \$15 per cwt. for cows, returns for all the pasture systems were reduced. In this case, the native grass and supplementary winter pasture rotation paid the most—\$7 an acre. The fescue-clover system was next at \$5 an acre, followed by native grass at \$3 and Bermuda grass-clover (in a six-year or a two-year rotation) at \$2. The last two rotations would return less than farmers are now averaging. (3)



OPTIMUM ENTERPRISE LEVELS FOR CASH-GRAIN FARMS <sup>1</sup>

Enterprise	Beef prices in dollars								
	15.86			20.02			24.18		
	Pork prices in dollars			Pork prices in dollars			Pork prices in dollars		
	11.40	14.28	17.15	11.40	14.28	17.15	11.40	14.28	17.15
Confinement litters	9	6	8	4	9	8	0	3	9
Portable litters	39	102	102	1	80	102	0	4	80
Calves fed (mechanization)	0	0	0	9	63	0	205	201	63
Calves fed	63	0	0	130	0	0	35	34	0
Yearlings fed	0	0	0	0	0	0	46	34	0
Feed grain acres	82	116	141	55	126	141	54	57	126
Silage acres	0	0	0	15	0	0	42	40	0
Oats acres	0	0	0	0	0	0	0	0	0
Soybean acres	57	24	0	57	0	0	0	0	0
Wheat acres	28	28	28	28	28	28	28	28	28
Alfalfa acres	30	0	0	42	21	0	75	75	21
Rotation meadow acres	13	32	31	2	26	31	0	2	26
Pork sold, hundredweight	994	2,236	2,285	139	1,821	2,285	0	129	1,824
Beef sold, hundredweight	406	0	0	869	406	0	1,640	1,569	406
Grain purchased, hundredweight	2,564	3,127	2,562	2,726	3,663	2,562	5,903	5,827	3,679
Dollar returns above direct expense	7,676	13,513	20,049	10,445	13,626	20,049	16,564	16,809	20,571

<sup>1</sup> Medium size farms (260 to 499 acres) in the southeastern corner of Nebraska. Prices and costs based on 1959 figures.

## Price Up, Price Down—Entire Farm Pattern Changes to Capture Profits

Higher costs, lower prices force today's farmer to get every last cent out of his resources.

The need calls for increasingly complicated decisions as a change in one commodity price sets off a chain reaction throughout the entire farm.

The kind of decision the farmer faces is illustrated in a recent study made in the southeastern corner of Nebraska. The study, conducted by the Nebraska Agricultural Experiment Station in cooperation with the Economic Research Service, included small, medium and large farms in three enterprise combinations — cash-grain, livestock and general farms.

The analysis points to an optimum combination of enterprises and production practices which would be attainable by most farmers in the area.

Take one set of possibilities, for example. It is based on average

resources for medium-size (260 to 499 acres) cash-grain farms. They were about a third of all the farms in the sample.

This is the way the use of resources would change if the farmer could shift his time and money investment at will within specified limits.

Starting out with low prices for pork and beef, the farmer farrows 48 litters of pigs, 9 in existing permanent facilities, 39 in additional portable houses. He feeds calves to the extent pasture land is available and produces soybeans to their agronomic limit. Rotation pasture and alfalfa hay supply roughage for the livestock. The remaining land is in feed grains.

As the price of pork goes up, while beef holds at the lowest level, beef begins to disappear from the farm plan. The farmer adds more portable farrowing and finishing facilities, he cuts his alfalfa hay production along with the beef and expands the rotation pasture. He is still producing some soybeans at this higher price for pork. The farmer will drop

them, however, when pork prices get up to the top, \$17.15, while he increases the feed grains.

The same kind of changes take place as beef prices rise. For instance, with a medium price of \$20.02 for beef and a low of \$11.40 for pork, hogs just about disappear from the farm. Using little mechanization, the farmer feeds between 800 and 900 calves, plants soybeans on 25 per cent of the cropland and produces enough alfalfa hay and rotation pasture for the beef and remaining hogs. He also turns to feed production on the remaining land—55 acres of grain and 15 acres of silage.

At many points in this changing pattern of enterprises for the farmer he will have to increase his investment in livestock facilities. But the investment will be limited by the amount of credit available as well as the other demands on the amount of capital available to him.

Of course, all such adjustments are conditioned by the amounts and types of resources available from farm to farm. (4)



## Combining Rice, Cotton and Modern Technology Pays in N. E. Arkansas

Rice, cotton, soybeans, wheat and corn can return a farmer in northeastern Arkansas a good income—if he combines them properly in his farm plan and uses up-to-date farm practices.

In a recent study of a representative 531-acre Arkansas rice farm, researchers used linear programming to estimate returns to management. In arriving at the various income levels, they considered both present and advanced levels of technology as well as current (supported) and free market prices for crops. Inputs

were figured at recent prices.

First the specialists examined the effects of the two levels of technology using assumed free market prices (\$3.60 per cwt. for rice, 25 cents per pound for cotton lint, \$1.80 per bushel for soybeans, \$1.18 for wheat and \$1.02 for corn).

Under present farm practices, the optimum farm organization included all the above crops and returned \$4,211 to the farmer after all expenses, including interest on investment, were subtracted. Returns with advanced technology in an intensive plan with only rice and cotton were considerably higher—\$21,979.

Then the researchers began

varying the prices for one or two crops at a time. Advanced technology and no acreage allotments or price supports were assumed.

As rice prices increased and other crop prices remained at free market levels, the farm plan shifted from cotton-corn to rice-cotton-corn and then to rice-cotton. The return to management was the highest—\$39,222—when rice sold for \$5.

When cotton was priced near the supported level of 30 cents per pound of lint and soybeans were at free market price, the cropping system went from all cotton to rice-cotton as the rice return rose. At the maximum price of \$5, net income was \$47,551. The soybean price in each case was too low to compete with the returns for rice and cotton.

With soybeans at the current price of \$2.50 and cotton at free market price, increasing the return for rice changed the optimum plan from soybeans-wheat-cotton to rice-soybeans-wheat-cotton and then to rice-soybeans-cotton. The return to the farm operator under the last of these plans was \$39,885.

With price supports, rice and cotton were more profitable than soybeans and wheat. So when acreage allotments and prices at the current supported level were introduced, rice and cotton were included to the maximum acreage permitted. Soybeans and wheat were allotted to the balance of the cropland. Returns totaled \$30,218, compared with \$21,979 at free market prices. (6)

## Plastic Levees to Irrigate Rice Cost Half Again as Much as Soil Varieties

Rice can't be produced without them but soil levees provide producers with a number of problems.

During the early part of the spring watering season levees require a good deal of care to avoid being broken. And they perpetuate weeds, obstruct harvesting

**WHERE "KEEPING UP WITH THE JONES" PAYS OFF:** How much difference does the adoption of advanced practices make in total and net returns? Quite a lot, according to a study of representative rice farms in Arkansas' Grand Prairie area. Using 469 acres of cropland and three resident workers, the most up-to-date cultural practices brought in \$8,656 more in returns to land and management than with present technology. Returns to management were at a loss under present technology. The table also illustrates some of the changes that occurred in production, use of labor and amount of capital needed. (5)

Item	Unit	Present technology	Advanced technology
<b>Cropland:</b>			
Riceland <sup>1</sup>	Acres	469	469
Rice	Acres	155	155
Soybeans	Acres	314	314
Oats <sup>2</sup>	Acres	—	—
Other	Acres	52	52
Soybeans	Acres	—	52
Oats <sup>2</sup>	Acres	—	25
Idle	Acres	52	—
Total	Acres	521	521
<b>Production:</b>			
Rice	Hundredweight	5,921	8,011
Soybeans	Bushels	7,543	11,144
Oats	Bushels	—	11,382
<b>Labor:</b>			
Resident <sup>3</sup>	Number	3	3
Maximum available	Hours	4,875	4,875
Used	Hours	2,676	3,497
Seasonal hired work	Hours	669	852
<b>Capital:</b>			
Invested	Dollars	25,475	35,968
Operating	Dollars	14,424	23,708
<b>Returns:</b>			
Land and management	Dollars	6,915	15,571
Land <sup>4</sup>	Dollars	7,294	7,294
Management	Dollars	— 379	8,277

<sup>1</sup> Cropland with less than 1 per cent slope. <sup>2</sup> Double-cropped with soybeans but not exceeding half of soybean acreage. <sup>3</sup> Number of permanent workers on farm. <sup>4</sup> At \$14 an acre for interest and taxes.



**GRAIN DRILL:** Here's how to figure the cost per acre to own and operate a 12- to 14-foot grain drill. Start with the purchase price of a new or used drill. Figure the annual depreciation as for tax purposes. Add an allowance for repairs, shelter, insurance and taxes. Include interest charges if money was borrowed. Total these figures and divide by annual acres of use to get the cost per acre.

Of course, tractor costs have to be considered, too. Multiply hours of use per acre by tractor costs per hour, which range from \$1.98 to \$2.76, depending on the size. (For the way to estimate tractor costs see August 1965 Farm Index.) These figures are averages supplied by northeastern Colorado wheat farmers in a 1960 survey. Prices are probably higher nowadays and may differ for other farming areas. But they still illustrate the way such costs can be estimated. (7)



Size in feet	12	14	16
Cost when new	\$900	\$1,007	\$2,014
Investment in 1960	\$495	\$554	\$1,108
Acres of use annually	250	260	690
Annual fixed costs:			
Depreciation <sup>1</sup>	\$32.50	\$41.20	\$106.62
Repairs	22.53	23.20	61.57
Shelter, insurance, taxes	9.85	10.92	21.84
Interest <sup>2</sup>	39.60	44.32	88.64
Total	\$104.38	\$119.64	\$278.67
Per acre	\$0.42	\$0.46	\$0.40
Size of tractor in bottoms	3	3, 4 or 5	4, 5 or 6
Hours per acre (multiplied by tractor cost)	0.23	0.20	0.10

<sup>1</sup> Cost when new minus 10 per cent—the remainder divided by estimated years of use. <sup>2</sup> Eight per cent interest on capital investment.

operations and take up space that otherwise could be used for rice production.

Some researchers have proposed replacing the earth levees with plastic ones. During 1962 this possibility was tested at two branches of the Arkansas Agricultural Experiment Station. The results revealed that the cost of the materials needed to construct the plastic levees was as much as half again the cost of the soil levees. This was true even counting the value of the yield of rice from the space normally taken up by the dirt levee.

For example, in the tests at the Stuttgrat branch, observations were taken of gently sloping, moderately sloping and relatively high sloping land. The yield of rice on the land previously occupied by the soil levee was 6.6 bushels, 8.9 bushels and 14.2 bushels, respectively. Valued at \$2.25 per bushel, the extra rice was worth \$14.80, \$19.98 and \$31.84.

The estimated cost of constructing 575 feet of soil levee (not including labor) was \$2.96 per acre for the gently sloping land, \$3.86 on the moderately sloping land and \$5.92 on the relatively steep slopes.

Adding these charges to the value of the extra rice for each of the three cases and dividing by the number of linear feet of levee required gave the researchers the answer. In order for the rice producers to break even, the plastic levees would have to cost about 3 cents per linear foot. Researchers figured the materials would cost this much or more.

The average increase in yields using the plastic levees at the Kelso branch was only a little over 16 bushels per acre within the area normally occupied by the dirt levee. The minimum break-even cost (at which the plastic levees would be economically feasible) was 1.67 cents per linear foot—roughly half the estimated cost. (8)

## Adopting Advanced Practices Means More Money for Clay Hills Farmers

If low-income farmers in the Clay Hills of Mississippi want a "blue book" to guide them, they'll soon have one. A new study by ERS, in cooperation with the Mississippi Agricultural Experiment Station, provides a wealth of cost and return figures for most crops produced on small Clay Hills farms. The data are averages from farm surveys in the area.

The costs and returns are presented for three land classes (bottom, terrace and rolling) with two sizes of equipment (small and medium) and two levels of technology (present and advanced). Advanced technology includes recommended new practices.

Cotton is easily the No. 1 cash crop in Mississippi. Although returns per acre for cotton in the Clay Hills are far ahead of the other cash crops, farmers could make even more money if they would adopt advanced practices.

In the study, cotton returns to land and management were highest with advanced technology and medium-size equipment. They averaged \$125 per acre on the bottomland, \$100 on terraced land and \$89 on rolling land.

The same was true for corn and soybeans. The use of advanced technology and medium-size equipment paid off handsomely. Highest returns for corn were \$54 on bottomland, \$43 on terraced land and \$31 on rolling land. Comparable figures for soybeans averaged \$37, \$25 and \$18, respectively.

A number of other crops are presented in detail in the report. They include corn silage, alfalfa, native hay and pasture, millet, soybean hay, oats (hay and grazing), lespedeza and several forage combinations.

For the forages, only the costs of establishing and maintaining the crop are given. Depending on the type of land, size of equipment and kind of technology used, the



annual costs per acre ranged from \$7.70 for dallis and lespedeza combined to \$66.57 for coastal Bermuda grass and lespedeza.

However, the most expensive combination would return the farmer the most for his money in yields of pasture and hay. The coastal Bermuda grass and lespedeza offered 270 days of grazing on all three land classes plus 3, 2 and 1 tons per acre, respectively, for the bottom, terraced and rolling land.

Livestock enterprises in the Clay Hills commonly include milking herds, beef and swine. The study results indicated that producing manufacturing milk paid off only under present technology (assuming a 16-cow milking herd). Net returns per cow averaged \$76. With advanced technology, producing fluid milk returned the most income—\$96 per cow from a 50-cow herd.

With advanced technology, beef production netted a yearly return to land and management of \$98 per bull unit (bull and 20 brood cows, 12 heifers, 22 calves). Using advanced practices, comparable net returns from feeder pigs averaged \$403 annually (12-sow herd) and \$317 from feeding out 192 market hogs. (9)

### **Tended by More Machines, Fewer Men, Today's Cows Are Giving Added Milk**

More milking machines, self-feeders, feed and litter carriers, barn cleaners, milking parlors—these machines and systems are a good part of the reason labor going into milk production has dropped by three-fifths since the early 1940s.

The rest of the reason is that there are fewer cows today, though herds are larger and the cows are producing more milk.

The output of milk per man-hour in 1963 (the latest year available) was at an all-time high, 39 per cent greater than the 1957-59 base period. (10)

### **Dairy Data**

Milk production up. Cow numbers down. It seems impossible but dairymen continue to do it each year. And 1964 was no exception. A record quantity of milk—126.6 billion pounds—was produced. The gain over 1963 output of 125 billion pounds was 1.3 per cent. Milk cows totaled 16.1 million, nearly 3 per cent fewer than a year earlier and the smallest total in 60 years.

Milk receipts from producers in 85 marketing areas averaged 157 million pounds per day in 1964—3 per cent greater than a year earlier. Dealers' buying prices for milk for fluid use averaged \$5.35 per cwt., 4 cents above 1963.

All-time high records were set during 1964 in the production of nine manufactured items—six cheeses and three frozen products. American cheese output rose 5 per cent over 1963; brick and Munster combined, 9 per cent; Italian, 8 per cent; blue mold, 10 per cent; and cottage cheese, 2 per cent. Production gains for frozen products: ice cream and Mellorine together were 2 per cent and ice milk was 6 per cent.

Net use of whole milk in the production of frozen dairy products was 10.3 billion pounds in 1964—a new record and 3 per cent above 1963. Butter and condensed milk use totaled 1.9 billion pounds (milk equivalent). Of the gross total of 12.2 billion pounds, 10.4 billion were used for ice cream.

Output of other dairy products last year rose over 1963 but didn't break records. Creamery butter production in 1964 increased 1 per cent, highest since 1954 except for 1961 and 1962. Milk sherbet production was up 3 per cent, still below previous highs in 1943, 1944 and 1945. Canned sweetened condensed whole milk was up a fifth, highest output since 1949. Total nonfat dry milk production for human food rose 3 per cent and was second largest of record.

The 25-city average price in 1964 for milk sold in stores in half-gallons was 46.4 cents, 0.6 cent above 1963. The average price per home-delivered quart was 27.7 cents, also up 0.6 cent. (11)

### **Putting All Resources Into the Dairy May Cut Off Farm's Future Growth**

Specialization may look like a good way—if not the only one—for the small-scale operator to get the most out of the costly equipment called for in dairying.

But in the long run specialization may well cut down on his income potential.

A recent study of conditions in the Wisconsin area makes two general points:

At all levels of gross income costs per dollar of income are higher the greater the specialization in dairying.

And a limited supply of labor holds total gross income to a fairly low level compared with less specialized farms.

It takes about three times as much labor, for example, to get a dollar of gross income from the dairy as it does from corn.

When the dairy part of the farm generates 60 per cent of the gross income, the operator's labor is fully used at about \$22,000 of gross income. If the dairy contributed 85 per cent of the income, labor is used up at \$18,000 of gross income.

By pushing dairying from 60 to 85 per cent of income, using the same amount of labor, the number of cows rises from 31 to 36. Acres for cash crops are cut from 97 to 30.

The operator gets \$550 for his labor and management instead of \$2,500. And the cost per dollar of gross income climbs to 97 cents from 88 cents.

As the one-man operation specializes more in dairying, use of field equipment and tractors drops, the cost-to-output ratio for the equipment rises. The effect tends to offset the better use of dairy facilities that comes with larger herds.

The study indicates the critical role labor plays as the dairy enterprise becomes a larger proportion of the total farm operation. (12)





## LABOR MARKET FAILING TO MEET JOB NEEDS

*City employment needs continue climbing but farm youths usually lack necessary training in fight for jobs. The labor pool among youths is increasing as the postwar baby crop matures but teenage unemployment stands at 15 per cent.*

The American labor market has too many square pegs failing to fit into round holes.

In an average week last year, almost 3.9 million people were looking for jobs—and not finding them. Another 2.5 million had to settle for part-time work.

At the same time, the demand for repair services, home maintenance and hospital and other community services, for example, often goes unmet because trained workers and efficient firms to provide services are in short supply.

The situation is clear that the people and the jobs don't match. But the solution isn't so clear, particularly on the farm scene.

Unemployment among farm workers is more prevalent than it

is among other groups in the national labor force. In 1959 about one farm worker out of four reported being without a job for 17 weeks of the year.

Underemployment also plagues rural areas more than it does the city. The intermittent, seasonal farm worker earns much less than the national average for comparable manual work.

There are several federal, state and local programs trying to cope with the problem of the untrained worker and the unfilled job. The task is enormous in rural areas because educational levels are generally low. Jobs must be sought in the cities, and few of the job seekers have the training for off-farm work.

Nor can the rural worker expect any automatic solution to the job problem, despite the expected increase of one-fourth in 1975's manpower requirements. The averages just don't apply to agriculture. On the contrary, agricultural employment should continue to decline during the period.

Though the agricultural worker in general is having his difficulties, even worse odds are being faced by teenagers, including those of rural areas. The national rate of unemployment, for example, dropped nearly 1 per cent to 4.8 per cent by the first quarter of 1965 during a period of little more than a year. But the unemployment rate for teenagers early this year stood at 15 per cent.



The situation is aggravated by the now familiar problem of the dropout, the youth who generally starts out poor, never gets education, remains forever untrained and must face ever stiffer competition.

The boy who never gets through high school faces twice the risk of unemployment as the graduate. Today there are about 7 million people between the ages of 16 and 21 who are out of school. Three million of them never made it through high school. There is another million in this age group with an education limited to the elementary grades or even less.

The large postwar baby crop is now coming into the critical employment stage—the late teens and early twenties. They now chart the course of their lives with present educational and employment decisions.

Only minor increases are expected in the over-25 brackets during the present decade. But nearly 50 per cent increases are expected in the 14-24 age group between 1960 and 1970. (13)

## High School Diploma Gains Value As White Collar Jobs Continue Increase

Riding the wave of the future? Or ending up on the economic rocks?

For today's youth, the different courses are written on the high school diploma.

More and more, jobs for the manual worker are drying up. The number of factory workers, for example, decreased by a million in just one year, from 1960 to 1961. On the other hand, the number of white collar workers increased by 1.5 million.

In 1960 white collar workers made up 42 per cent of the working force. The figure is expected to reach 45 per cent by 1970. Blue collar jobs are expected to decrease slightly from 37 to 36 per cent in the same period.

The high school degree is, in

fact, becoming the bare minimum for a job seeker. College or some other special training is increasingly important. The major increase in the labor force today is in the college-trained professional field. There were 4.5 million professionals in the nation in 1952. Today there are about 7.5 million—about a 65 per cent increase. This is a much faster rate of growth than for the total labor force.

In spite of these needs for the more educated person to fill jobs, the country has a massive group of adult illiterate and semi-illiterate. For example, there are 2.7 million adults who have never been to school, and there are 23 million adults who have never finished grade school.

The illiterate is at a disadvantage in jobs because he often cannot handle ordinary tasks. For instance, many illiterates cannot follow instructions for industrial machinery, take telephone messages, add up a bill at a corner grocery store or sign a personal check. Often he is incapable of absorbing training which requires educational skills.

A lack of education is a twofold problem: The individual worker is trapped in bare subsistence jobs, and he adds to the social costs.

For example, inadequate education is a factor in the high costs of welfare and similar programs, many of which are directed to the poorly educated.

A recent study in Chicago indicated that nearly two-thirds of those on welfare rolls had less than a sixth grade education. In New York one-half of the family heads receiving general assistance had completed only six years of schooling. In Arkansas 89 per cent of all persons on welfare rolls had less than a fourth grade education.

The rate of unemployment among illiterate city adults runs to 50 per cent; among the semi-literate, 25 per cent. The over-all national rate of unemployment is less than 5 per cent. (14)

## Percentage of Fatal Farm Accidents Increasing With Machines Top Killers

The machine helps the farmer in his work but it can be a death trap.

On a percentage basis, fatal farm accidents have been climbing rapidly in recent years. During the 15-year period ending in 1963, the death rate rose 66 per cent, bringing the rate to about 17 a year per 100,000 farm people. It was 10.4 in 1949.

Machinery is the leading cause of these deaths on the farm, accounting for nearly 38 per cent of all accidental deaths during the years 1960-63. In this period machinery killed 44 per cent more people on farms than in all mines, quarries and industrial places combined.

Though the actual number of farm accidents has been decreasing each year, the decline is not in proportion to lower farm population. Total fatal accidents dropped from 2,522 in 1949 to 2,309 in 1963—but the farm population was nearly halved from 24,194,000 in 1949 to 13,367,000 in 1963.

This population trend is part of the reason for the high rate of accidents on the farm. Exodus from farms has been mostly in the younger groups, thus leaving the more accident-prone older group on the farm. Fatality rates increase rapidly after age 49. By 75 or older the rate is more than double the national average.

Drowning is the leading killer of young people on the farm, causing a third of the fatal accidents for the 20-year-old or younger group. Machines take the dubious honor after that age.

Western Mountain Region farmers accounted for the highest death rate in the 1960-63 period with 24 per 100,000. The Delta States, on the other hand, accounted for the lowest rate with 12. Fatalities ranged from 1,872 in the Corn Belt to 540 in the Pacific Region. (15)



**ORANGE JUICE BROUGHT HIGHEST RETURNS,  
BAKERY GOODS LOWEST, IN EIGHT-STORE FROZEN FOODS TEST**

Product group	Frozen food sales	Gross margins of group sales	Weekly sales per square foot of display space
		Per cent	Dollars
<b>Drinks</b>	27.6	21.7	19.64
Orange juice	21.1	18.6	23.62
All other	6.5	31.7	6.73
<b>Vegetables</b>	15.4	24.4	7.28
Peas	2.7	22.9	7.79
All other	12.7	24.8	7.18
<b>Dinners</b>	9.9	26.6	12.43
<b>Fish</b>	8.0	28.9	8.16
<b>Prepared foods</b>	7.8	27.4	9.13
<b>Potatoes</b>	7.7	25.4	8.19
French fries	4.4	27.0	8.43
All other	3.3	23.2	7.88
<b>Bakery</b>	7.6	26.2	5.25
<b>Meat pies</b>	6.7	18.8	12.68
<b>Meat and poultry</b>	4.9	27.7	11.66
<b>Fruits</b>	4.4	27.1	9.54
<b>Total department</b>	<b>100.0</b>	<b>24.8</b>	<b>9.72</b>

*More display space, more sales—it holds true for some frozen foods more than others. Retailers can cut freezer costs by*

## FINDING THE FROZEN ASSETS

Frozen food cases in today's supermarkets abound with a vast array of products from frozen shrimp to French croissants.

With just so much frozen food space in a supermarket, how much should each product get? The question is of vital concern to the entire frozen food industry. For despite the consumer's rapid acceptance of frozen foods after World War II, these foods are still a relatively minor factor in total grocery sales.

A new ERS study shows space allocation alone has a definite effect both on individual product sales and on total sales in the

frozen food department.

Economists conducted a controlled test of frozen food departments in eight stores of a single firm in New England. By confining the study to a single firm, researchers were able to minimize differences among stores in pricing, merchandising and promotion policies.

In the test stores, frozen foods took up 4.4 per cent of the selling area but accounted for only 3.5 per cent of store sales. Even on the basis of display footage, other departments did better than frozen foods. Whereas the frozen food department averaged sales of

\$2.67 per square foot, the figure for the entire store was \$3.36.

The test turned up some wide differences among products in their rates of turnover. For example, weekly sales per square foot of display space ranged from \$5.25 for bakery products to \$19.64 for orange juice. Frozen dinners, meat pies and meat and poultry had sales per square foot of about \$10. These wide variations indicated that display space was not being allocated on the basis of turnover.

Returns per square foot also varied considerably, from \$1.17 for bakery products to \$3.61 for orange juice. Returns for meat and poultry were rather high at \$2.72 while peas (the only vegetable considered separately) were low at \$1.44.

If these differences in returns to space are to be reduced, the stores surveyed will have to alter the margin structure, that is, the difference between the price they pay for a product and the price at which they sell it. Or they will have to make some major re-allocations in display space.

Economists analyzed what various space reallocations would mean in dollars and cents. For example, they found that orange juice sales jumped \$17.17 for each square foot of added display space. This was in stores with total sales volume (all food and nonfood items) of more than \$40,000 a week. In stores with sales volumes of \$20,000 to \$40,000, frozen orange juice sales climbed \$13.65 for every square foot increase in display space.

Peas showed the lowest response to added display space—\$2.60 in high sales volume stores, \$2.33 in the low volume group.

The test showed three groups had over 50 per cent of all frozen food sales—drinks (27.6 per cent), vegetables (15.4 per cent) and dinners (9.9 per cent). Least responsive were meat and poultry (4.9 per cent of sales) and fruits (4.5 per cent). (16)



## Ripe, Green and Greenhouse Compete In Market Tests of Tomato Types

Are tomatoes just tomatoes? Will consumers substitute vine-ripened tomatoes for mature green ones when the price is right? (Florida is the major producer of both.) Or will consumers prefer greenhouse-grown tomatoes, produced chiefly in the Great Lakes Region?

To find out, economists at the Florida Agricultural Experiment Station, in cooperation with the Economic Research Service, recently ran a six-week test in six retail food stores in and around Lima, Ohio.

Their purpose was to help Florida growers decide whether to produce vine-ripened tomatoes, a relatively new practice, or concentrate on the traditional practice of picking tomatoes when they are mature but still green.

Also, the study indicates to greenhouse tomato growers the extent of competition between their product and Florida-grown tomatoes.

From retail trade sources researchers knew that greenhouse tomatoes have been selling for 49 cents a pound, vine-ripened tomatoes for 39 cents and mature green ones for 29 cents.

In the test the price of each variety was changed daily in combinations varying up to 16 cents above and below these base prices. Thus, greenhouse tomatoes varied from 33 cents to 65 cents a pound; vine-ripened from 23 to 55 cents; and mature green from 13 to 45 cents.

Over-all results of the six-store test show that for every 1 per cent increase in the price of greenhouse tomatoes, consumers bought 1.8 per cent less. Obviously, the converse was also true; a 1 per cent price decline caused customers to buy 1.8 per cent more greenhouse tomatoes.

The same 1.8 change ratio applied to vine-ripened tomatoes.

But the change was a shade less (1.7 per cent) for mature green tomatoes.

Next, researchers looked at what happened to purchases of one variety when the price of another variety was raised or lowered.

Regardless of changes in the price of greenhouse tomatoes, up or down, there was no measurable effect on sales of mature green tomatoes but vine-ripened sales changed .31 per cent.

For every 1 per cent change in the price of vine-ripened tomatoes, sales of greenhouse tomatoes changed .47 per cent, mature green, .25 per cent.

Finally, a 1 per cent change (up or down) in mature green sales caused sales of greenhouse tomatoes to drop (or climb) .39 per cent, vine-ripened, 1.01 per cent. (17)

## Free Versus Regulated Rates Mark Three-Way Grain Traffic Controversy

Strong competition among railroads, barge lines and truckers for grain traffic has stirred up a great deal of controversy about transportation rates.

Three of the major issues are: "public" versus "private" costs; a waterway users tax; and the amount of government regulation of transportation of agricultural products.

The "public" versus "private" costs issue arises when different carriers—barges, trucks or railroads—publish rates based on the cost to them of providing a particular service. In a recent case a railroad contended that barge lines should have to include in their cost totals a share of the public (primarily federal) expenditures made for improving and maintaining waterways.

The barge lines, on the other hand, contended that these expenditures of public funds were not part of their own operating costs — "private" costs — and should not be used in determining

the actual cost of providing the transportation service and therefore the minimum rate they had to charge.

Closely related to this issue is the controversy over a waterway users tax. Trucking interests point out that mileage, gasoline and other taxes they pay are used to construct and maintain highways. So they contend that barge lines should have to help pay for the improvement and maintenance of waterways.

The barge lines say that Congress provides funds for several purposes such as navigation, conservation and national defense and that they should not be penalized just because the public expenditure is made.

The third issue—regulation of rates for agricultural products—is also the subject of heated argument. Trucks are now free of rate regulation when they transport unmanufactured agricultural commodities. Barges are free when they haul bulk commodities, including grain, in interstate commerce. Some people want railroads given both the agricultural and bulk commodity exemptions to enable them to better compete with trucks and barges.

Others want truckers and water carriers to apply for and obtain certificates that specify what commodities they can haul, where they can haul them and at what rates. (18)

## High Mortality Rate Goes With Developing New Product Variations

Manufacturers presented food stores with an estimated 5,000 to 6,000 new product variations in 1963. Only 1,800 of them got onto the shelves and all but 500 died out during the year.

This mortality rate gets built into the cost of food, offering reason enough to find more certain guidelines to successful new products.

New products make improved



sales performance and profit records, while stimulating the economy. One large food manufacturer estimates he gets one-third of his income from products developed in the past 10 years.

But the food industry needs better tools in predicting product demand than the expensive trial and error methods now used.

ERS economists have recently constructed a model which, within its limits, sheds more light on the nature of success for new convenience foods.

A few of the points underlined by the theoretical sales structure for a convenience food are:

—Customers buy more of the convenience food when the price of the equivalent home-preparation food goes up.

—If the food is generally important in meals, it stands a better chance of succeeding. Or, to put it in terms of the model, as sales increase for all items in the product group, they go up for the given convenience item.

—If it isn't on the shelves, it won't sell. When the availability of the product moves from 1 to 50 per cent of the stores, predicted sales increase nearly sixfold. But there is apparently a saturation point. The rate of increase in sales begins to drop off after the 50 per cent availability level has been achieved.

—Success breeds success. When sales go up for the highest volume item within the competing group, estimated sales of the study product tend to climb. Chances are that one success in a type of convenience food sets the customers to looking for similar items in the same category.

The researchers note, however, that their model needs to be improved through further study to include other factors. For example, if the effects of relative quality and the stage of market maturity could be built into the model, it would be an even more effective tool for further research in this area. (19)

## First Half Rise in Milk Marketings Should Hold Up Throughout 1965

Milk marketed commercially in all types of dairy products climbed more than 1 per cent in January-June 1965 over the 56.1 billion pounds sold in the first half of 1964.

Based on the performance of the first six months, ERS economists see the full 1965 calendar year maintaining this increase of over 1 per cent compared with 1964.

Repeating the trend for all milk products, sales of fluid whole milk in federal and state regulated markets climbed 1 per cent in the first half of 1965 compared with the same period in 1964. January-May sales (product weight) of all fluid milk products jumped 1.8 per cent. Skim and low-fat milk were up 8.2 per cent.

Conversely, fluid cream continued to slide as it has in recent years, this time falling 1.7 per cent below last year's level. Milk and cream mixtures declined 2.3 per cent.

Despite gains in commercial sales of fluid products, national per capita consumption probably won't maintain the 1964 level of 305 pounds milk equivalent. Use of home-produced milk on farms continues to fall as dairy farmers turn to different ways of making a living.

Among the manufactured products, gainers in the commercial market in January-June 1965 were: dry whole milk, up 8 per cent over the same 1964 period; ice cream, up 1.6 per cent; and cheese, up 0.5 per cent.

On the minus side, both commercial and total use of evaporated milk declined, each by 6 per cent, in January-June this year compared with a year earlier.

Commercial use of butter was down 3 per cent; total use dropped 8 per cent largely because low Commodity Credit Corporation (CCC) stocks required USDA to halt donations of butter to institu-

tions and needy people in the first half of 1965.

CCC donations for welfare and school use are likely to be lower through all of 1965 than 1964. But economists expect rising commercial use to maintain total milk consumption in all products near 1964 levels. On the other hand, they consider that per capita use will fall 1 to 2 per cent below last year's 628 pounds.

With milk in commercial use rising faster than farm marketings, the government purchased less milk in the first seven months of 1965. CCC purchases, plus payment-in-kind exports, for January-July totaled 6.2 billion pounds milk equivalent, 600 million less than in the same period of 1964: for April 1-July 31 they were 23 per cent below the same 1964 period. (See story in Consumer section.) (20)

### *What's New In Marketing Research*

Here are new projects in marketing research to be done by or for ERS.

*Interregional Competition in the Poultry and Egg Industries.* Several state experiment stations will cooperate with ERS to analyze future possibilities for producing and marketing eggs, broilers and turkeys in the various regions of the U.S. Consideration will be given to input-supplying and marketing systems, transportation costs, quality and the effects of alternative uses. Projected completion date: 1967.

*Existing Capacity and Resource Requirements for Processing Fruits and Vegetables in the Southern States.* Input requirements and cost estimates for freezing and canning vegetables at various rates of output will be studied by Clemson University. This contract is part of a broad study by 11 southern states to develop physical input-output data. Object of the over-all study is to estimate costs of alternative methods of performing specific functions in marketing fruits and vegetables. Projected completion date: mid-1967. (21)



# NATIONS THAT LEAD THE WAY

*A nation increases agricultural output because of the quality as well as the quantity of its human, technical, physical and financial resources. A country may, in fact, succeed against all odds if its people are determined to do so.*

Education in Sudan. Interest rates in Mexico. A laboratory in Yugoslavia. Farm machinery in Thailand. Unused acres in Brazil.

These are the pieces. Together they make up a picture of progress. Paradoxically, they also illustrate the obstacles lying in the way of agricultural and economic development for the nations of the world.

How, for instance, did a country like Japan—noticeably short on land, long on people—forge a modern industrial plant based on a thriving agriculture, while a country such as Argentina—blessed with natural riches—has shown little progress for more than three decades.

The question, in short, is what are the elements of progress?

How does one country put them together in a successful pattern while another, with similar resources, can barely manage to hold its own?

The questions are the guiding points for a study now under way in 26 developing nations around the globe. The immediate, limited aims of the study are to measure changes in agricultural output

**THE X-FACTOR OF SUCCESS:** Land, labor, capital—the classic elements in the economic mix. By themselves, they have no power to lead a country along the path of economic development. It takes an elusive “x-factor,” which might be called a national will to succeed, to breathe life into the human, physical and social elements of an economy. Each of these countries, selected from 26 currently under study, has a unique combination of

resources and technical possibilities with a varying mixture of strengths and weaknesses. None of the countries achieving a relatively rapid rate of growth has all factors going for it. Sudan, for example, must struggle against a generally illiterate population. In Yugoslavia there is almost no extra land available for cultivation. And most of the countries are beset with rapidly expanding populations. But these success countries have either managed to

## RAPID GROWTH COUNTRIES

MEASURE OF GROWTH	Unit of measure	Sudan	Mexico	Yugoslavia	Thailand	Brazil
Annual change in crop output, 1948-63	Per cent	8.0	6.3	5.1	4.4	4.2
Land factors:						
Arable land expansion potential	Rating <sup>1</sup>	1	3	4	3	1
Increase in crop area, 1948-63	Per cent	49.9	49.7	6.8	29.5	54.6
Human resource factors:						
Population growth rate, 1950-60	Per cent	3.4	3.1	1.1	3.2	3.1
Illiteracy rate	Per cent	93	35	23	32	51
Capital and credit factors:						
Increase in fertilizer per acre 1950-62	Pounds per acre	2.5	10.0	40.9	1.9	9.8
Capital formation per agricultural worker, 1953-61	Dollars	n.a.	n.a.	66	1	n.a.
Annual growth in agricultural credit, 1953-61	Per cent	n.a.	3.3	n.a.	n.a.	6.4
Total crop yield increases, 1948-63	Per cent	74.8	29.0	35.5	31.1	6.5
Technology factors:						
Research programs in 1950s	Rating	2	2	2	2	3
Extension, education programs in 1950s	Rating	1	2	1	3	3
Conditions of tenancy in 1950s	Rating	3	1	1	3	2
Market conditions and demand factors:						
Marketing facilities in 1950s	Rating	3	1	1	3	2
Availability of purchased production needs	Rating	2	1	1	2	2
Fertilizer prices, 1962-63	Rating	1	n.a.	1	3	n.a.
Annual increase in food demand, 1950-60	Per cent	3.9	4.2	6.4	4.9	4.4

<sup>1</sup> The most favorable conditions are given a rating of 1; least favorable, 4.



since 1948. More broadly, the study seeks the natural, technological, economic, social and institutional factors that make the difference. The study is seeking, in effect, the secret of success.

Researchers have selected the countries to represent as wide a variety of national characteristics as possible. In Europe they have chosen Yugoslavia, Poland and Spain; in the Far East—Thailand, the Philippines, Taiwan and Japan; in the Near East and South Asia—Jordan, Israel, Greece, Turkey, Iran, Pakistan and India; in North Africa—the United Arab Republic (Egypt), Sudan and Tunisia; in Central Africa—Nigeria and Tanganyika

(now the nation of Tanzania with Zanzibar); and in Latin America—Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Venezuela.

These countries represent three-quarters of the population and economic product of all countries receiving American aid.

India exemplifies the pressing need for agricultural development. If present food supplies in India were distributed as far as they would go, at the rate of 2,300 calories per person a day, 48 million people would be left totally without food. If these same food supplies were distributed at the U.S. average of 3,190 calories per person, 153 million people would

be left without food.

It's bad enough that a nation should be without enough food but the shortages also slow, if they don't halt, economic progress. When pressure on domestic supplies is too great, vital agricultural exports are cut back, foreign exchange is diverted from needed capital goods to food supplies and rising food prices push the country into inflation.

In making their analysis the researchers listed the nations according to the rate of growth. Rapid growth was set arbitrarily at an annual increase in total crop output of 3.7 per cent or more between 1948 and 1963.

Such a rating puts Japan among

do fairly well in most areas, or they have greatly excelled in one or two important ways. Rapid rates of increase in crop output have not just happened in any of the countries as a consequence of normal economic and social processes in societies organized on a laissez-faire basis. Instead, progress has been undergirded by aggressive group action, generally national in scope, directed specifically to improving agricultural service

facilities as a means of improving agricultural output and productivity. Sudan, Mexico, Taiwan and Brazil have opened up new lands, developed extensive irrigation projects. Agricultural education has received increasing emphasis in these countries. The important lesson for developing nations is that progress is possible even when faced with formidable obstacles, such as lack of basic resources.

### SLOW GROWTH COUNTRIES

MEASURE OF GROWTH	Unit of measure	India	Argentina	Spain	Nigeria	Egypt
Annual change in crop output, 1948-63	Per cent	3.1	2.8	2.7	2.6	2.0
Land factors:						
Arable land expansion potential	Rating <sup>1</sup>	4	1	3	3	3
Increase in crop area, 1948-63	Per cent	26.0	2.7	3.1	n.a.	6.2
Human resource factors:						
Population growth rate, 1950-60	Per cent	2.0	1.7	0.8	3.7	2.4
Illiteracy rate	Per cent	76	14	13	89	80
Capital and credit factors:						
Increase in fertilizer per acre 1950-62	Pounds per acre	3.1	0	25.3	n.a.	70.3
Capital formation per agricultural worker, 1953-61	Dollars	3	n.a.	n.a.	n.a.	19
Annual growth in agricultural credit, 1953-61	Per cent	18.3	n.a.	n.a.	n.a.	7.5
Total crop yield increases, 1948-63	Per cent	14.3	23.5	36.9	n.a.	22.3
Technology factors:						
Research programs in 1950s	Rating	2	2	2	3	2
Extension, education programs in 1950s	Rating	3	2	3	2	3
Conditions of tenancy in 1950s	Rating	3	2	2	3	1
Market conditions and demand factors:						
Marketing facilities in 1950s	Rating	3	1	1	3	3
Availability of purchased production needs	Rating	2	1	2	3	2
Fertilizer prices, 1962-63	Rating	3	n.a.	1	n.a.	3
Annual increase in food demand, 1950-60	Per cent	3.4	1.7	3.0	4.9	4.0

<sup>1</sup> The most favorable conditions are given a rating of 1; least favorable, 4.



the slow growth companies simply because Japan has been able to turn its attention from agriculture to industry in recent years.

The rating doesn't compensate for population increases. As a result, crop output per capita in a few of the lagging countries is higher than in some of the more advanced group. But the problem of population growth, though of primary importance to the world, cannot be solved by agriculture.

If the slow-growth nations are to benefit from the experience of the leading countries, they need to see the way in which the successful countries have made the most of strong points, circumvented weaknesses.

The key indicators of success are: difference in output per agricultural worker; rate of increase for crop output; yields; change in land area; change in crop patterns and methods of increasing yields.

*Change in output per agricultural worker.* Output per agricultural worker ranged from a high of \$1,825 in Israel to a low of \$95 in Thailand.

There is no simple explanation for the difference. Generally, however, the 10 countries that led in value of output per worker had much more arable land per worker. Most of them also used more capital per acre as measured by their use of fertilizer. Also, the workers were better educated in the leading group. In seven of the top 10 countries, 70 per cent or more of the population over 15 years of age was literate.

There are, of course, exceptions to the general pattern. Japan and Israel, both high output countries, had 1.0 and 10.1 acres per worker compared with 32.4 in Argentina. But Japan's capital investment per acre ranks among the top two or three countries of the world. And its investments in improved technologies and education are among the highest of any country.

Japan, in effect, has been able to compensate for its lack of land with an increase in capital and

human investments.

If India could achieve a similar output per acre the value of output per agricultural worker would be about \$1,150 instead of \$144.

However, a high level of output per agricultural worker is, as a rule, associated with an active total economy, particularly as measured by per capita income. Growth in the nonfarm sector leads to larger markets for agriculture. It also leads to a larger supply of the production inputs.

Furthermore, countries that lead in the value of agricultural output per farm worker also stand apart from the others in such backup facilities as roads, electric power, hospitals, schools and research groups.

*Increase in crop output.* A nation increases its output because of the quality as well as the quantity of its human resources, its land and capital, and its technical skill. It also depends on such institutions as land tenure, the taxing system and all the other social factors that affect the relation between effort and reward.

A country may excel against all odds because the leaders and people are willing to make the effort and sacrifices to increase future production.

The study countries thus display no consistent relationship between changes in any one factor and rates of change in crop output. There is, however, a fairly consistent tendency for the more advanced countries to achieve some progress in a fairly large number of the factors contributing to growth or to be outstanding in one or two of the key areas of development.

Israel, for example, took the former course, achieving relatively high standards in everything from the area of cropland available to health and educational standards.

Such countries as the Philippines and Tanganyika concentrated on expanding the area under cultivation while scanting

most other factors of development.

*Increases in crop yields.* The leading group of nations in the study are about equally divided between those that have increased output largely by adding to their supply of cropland and those that have managed to increase yields. Though many of the developing nations still have a supply of unused arable land, many others don't.

Recent increases in yields for most of the study countries are the result of greater use of fertilizer, improved crop varieties, more effective pest control, better methods of planting, tillage and harvesting and more efficient use of water resources.

Available information is still too sketchy to offer any precise measure of the individual contributions of these factors. And in a country such as India, purchased inputs are as yet less important than simple improvements such as better spacing of plants and tillage practices. Such practices can be exploited in the early stages of development. By themselves, however, they won't increase yields beyond a limited point.

Chances are the job of agricultural development will be harder in the future.

For short periods during the 1948-63 study period, several countries achieved fairly rapid increases both in total and in per capita output of crops. Too often, however, such success has been followed by a gradual slowing of the rate of progress. Most likely the rapid increases reflected a period of "catching up," when the nations were able to exploit the simpler improvements.

Long-term progress will rest on more expensive foundations, the kind that call for more complicated organization. Roads, market facilities, credit agencies, research and education programs and frequently new tenure patterns are all a necessary part of continuing progress in agriculture. (22)



## Many Underdeveloped Countries Face Decision: Buy or Produce Fertilizer?

The puzzle goes something like this: too many people, not enough food. Too many low-yield acres, not enough fertilizer.

On paper the puzzle carries its own answer: more fertilizer.

On the land the answer merely adds another problem, the problem of where to get the fertilizer.

For many a developing nation—most perhaps—this is anything but an academic exercise. By 1980 the relation of population to food supplies will be such that the need for fertilizer will be 10 times the amount used in 1960.

Whether these nations would be better off importing fertilizer or developing their own supplies depends on many factors in their entire economic structure.

Some of the countries have little choice. They don't have the raw materials for local development. For others, those with a relatively small need for fertilizer, importing may still be the most reasonable course to follow.

The greater number of developing nations need to expand their own fertilizer resources. But a viable fertilizer industry is dependent on a series of related developments. For instance, water—enough of it and enough of the right kind—is needed to supply cheap electric power. Water power is particularly needed for production of synthetic nitrogenous fertilizer.

While vast deposits of phosphatic rock are scattered about the world, supplies are concentrated in the U.S., the Soviet Union and North Africa. Potassium salts are abundant in East and West Germany, Spain, the U.S., USSR and Canada.

Basic slag, an important source of phosphorus, is a by-product of the steel industry. It isn't apt to be available in many of the underdeveloped nations. Similarly, bone meal becomes phosphorus but sup-

plies of bone meal depend on having a large meat packing industry.

If a nation can find the basic raw materials, it has then to find the capital needed for construction of the fertilizer plants. Most likely it will have to obtain the money from abroad to avoid a further drain on scarce foreign reserves. Still, the burden would probably be less than continuing to import raw materials or fertilizer for years ahead.

There is indeed always the possibility that a group of nations could pool resources to produce fertilizer, thereby extending the market for the product and reducing the costs to each cooperating nation.

Whichever way, if foreign capital is involved, political considerations also enter the picture. There is little incentive for the foreign investor if threatened with the possibility of losing his plant or not being permitted to take profits out of the country. (23)

## Ghana Cuts Agricultural Imports to Obtain Better Balance of Payments

Agricultural imports by the Republic of Ghana, having soared to nearly \$70 million in 1961, were slashed to about \$40 million in 1963 as part of the nation's effort to restore a more favorable balance of payments.

But with a rising population agricultural imports should turn upward in the next decade. Such a forecast assumes the nation will be able to weather its current economic problems and achieve a degree of progress.

A recent study by the Economic Research Service spotlights the import needs of the west African republic for 1970 and 1975.

Imports from the United States amounted to \$7.8 million in 1963. The greater part of our shipments consisted of rice, wheat products, tobacco, milk and meat products.

With a marked preference for the uniformly graded, long-

grained American rice, Ghana has proved itself to be a growing market for American exporters of rice.

Starting with 1 per cent of the import market in 1956, the United States accounted for 94 per cent by 1962. In the first six months of 1964, the United States supplied Ghana with 99 per cent of its rice imports.

Despite government intentions to encourage domestic production, rice imports are expected to rise appreciably, reaching 34,000 tons by 1970 and 40,000 tons by 1975. The United States is expected to supply at least 85 per cent of these totals.

Though consumption of wheat products is small in Ghana compared with countries using wheat, it is large by the standards of tropical Africa. An expanding demand for wheat products is expected.

Canada has recently replaced the United States as the major exporter to Ghana, largely because of Canadian success in capturing the market of the village women who bake around 70 per cent of the wheat bread.

Projections indicate Ghana will import some 95,000 tons of wheat in 1970, and 120,000 tons in 1975, mostly as grain to supply the nation's major mill.

The United States supplies about a fifth of the import needs for wheat and probably will maintain this share through 1970 and 1975. The volume would be about 19,000 tons of wheat flour in 1970, some 24,000 tons in 1975.

Imports of dairy products have increased fourfold since 1949, with evaporated milk accounting for two-thirds of the total on a value basis. The bulk of the supplies come from the Netherlands, with the United Kingdom making up most of the difference.

Prospects for U.S. sales of livestock or meat products in Ghana appear limited. Live animals make up the greater part of imports and most of them come



from neighboring African countries.

The U.S. is not likely to increase its share of the market for livestock or meat products by any substantial degree.

Poultry has somewhat better prospects for sales, though there is no specific information on the market. However, the possibility of a rising economy and standard of living, along with relaxed trade restrictions and fewer austerity measures, could result in a greater demand for higher quality food such as poultry.

Tobacco imports from the United States are largely Black Fat for chewing and flue-cured for smoking.

Ghana is rapidly increasing its production of flue-cured tobacco. Thus, the projected 700,000 pounds of tobacco imports from the U.S. would be primarily Black Fat. However, if Ghana should succeed in its efforts to duplicate the flavor and quality of Black Fat tobacco, imports from the U.S. would be considerably below the projected levels. (24)

## Fiscal '65 Was \$6.1 Billion Repeat Of Farm Export Record Set in '64

A few new commodities moved into the export spotlight in the fiscal year ended last June 30. Otherwise, our farm export picture in 1964/65 was a carbon copy of the previous year—total shipments again came to \$6.1 billion, an all-time record high.

Moving into the spotlight with far higher sales this year than last were: corn, soybeans, cottonseed and soybean oils, oilcake and meal, inedible tallow, hides and skins and dairy products.

Gains in these exports were about offset by reduced shipments of wheat and flour, rye, cotton, tobacco, vegetables, meats and meat products and poultry meats.

Although wheat exports (including flour and bulgur) of 724 million bushels were the second highest on record, they were 132 million bushels under 1963/64, the year large Russian purchases helped to raise the export total.

Also, U.S. wheat, along with

cotton and tobacco, ran into stiffer competition in fiscal 1965 from other supplying nations. Our cotton was especially hit in the West European and Japanese markets by the continued rise of manmade fibers.

Again in fiscal 1965 about three-fourths, or \$4.4 billion, of our farm exports were dollar sales. The other \$1.7 billion moved abroad, mostly to less developed countries, under government programs.

Helping the U.S. maintain its \$6.1 billion record for the second year running was a brisk demand in dollar markets for such items as feed grains and soybeans for livestock feed. These sales, of course, reflect the growing demand for meat in Western Europe, Japan and other industrialized areas.

Also aiding our sales was a vigorous U.S. promotion program in many of the important foreign markets. The program stressed trade fairs, trade centers and demonstrations and attention to specific marketing problems. (25)

### Foreign Spotlight

UNITED STATES. Payment assistance to exporters of farm products in fiscal 1965 was about 45 per cent under the previous year. Preliminary figures put the amount at \$455 million on exports valued at \$2 billion. Big reason for the drop was smaller sales abroad of wheat and cotton. Assisted exports represented about a third of total farm shipments whose value topped \$6.1 billion. Exporters get assistance on farm products they buy at domestic prices but have to sell at lower world prices in order to compete with other supplying nations.

CENTRAL AMERICA. The Central American Common Market countries expect by 1969 to export \$850 million worth of coffee, cotton, bananas, beef, sugar, timber, seafood, cottonseed and sesame seed. This would be a leap of more than 40 per cent in dollar value of exports since 1964.

The value of CACM exports in 1964 was \$600 million—20 per cent more than in 1962. Members of the trading union are Guatemala, Honduras, Costa Rica, Nicaragua and El Salvador.

SUDAN. Some 50,000 Sudanese, displaced by rising water from the new Aswan High Dam in Egypt, are almost completely resettled. All inhabitants of the Wadi Halfa village, along the Nile near the Egyptian-Sudanese border, are relocating in Kashm-el-Gerba, a semi-desert area about 200 miles east of Khartoum along the Atbara River. Egypt gave the Sudan 15 million Egyptian pounds (\$43 million, 1959 rate) to pay for the land and help finance resettlement. Another help is a new dam built along the Atabara. And the United States is supplying food through the World Food Program while the new settlers develop both cash and food crops. Expected to irrigate 520,000 acres, the dam establishes a base for a future hydroelectric plant. (26)



## Milk Consumption on Decline With 1964 Figure Lowest on Record

In one form or another, Americans consumed the equivalent of one-and-three-quarter pounds of milk every day last year.

It added up to 628 pounds a person on the average.

Though this is a lot of milk, it is considerably less than consumption in the past. Between 1954 and 1963 per capita consumption of milk in all products declined in all but two of these years. The drop averaged six pounds a year.

About 305 pounds of the total milk consumption was in the form of fluid milk and cream. Americans have been cutting down on the amount of fluid milk and cream they consume since 1956, though the use of skim milk is rising. The 1964 combined figure is the lowest on record. Even so, average consumption was about the same in 1963 and 1964, after having dropped an average of eight pounds a year between 1958 and 1962.

We are eating less butter, too. In 1964 we averaged 6.8 pounds of butter, about 1 per cent below the level in 1963. The amount of butter we eat every year has dropped off in eight of the last 10 years by an average of 0.2 pound a year. In fact, a major part of the decline in total milk consumption has been due to this drop in use of butter.

Another loser in the dairy sweepstakes is evaporated milk. At 9.0 pounds a person for the year, consumption of evaporated milk was 4 per cent below the 1963 level. Since 1950 consumption has been dropping off by an average of 0.6 pound a year.

Though we consumed a little more condensed whole milk last year—2.3 pounds a person compared with 2.2 pounds in 1963—the figure was still 0.2 pound below the 1958-62 average. However, several milk products are gaining popularity.

Cheese, for instance, continues to grow in favor. Over-all, we ate an average of 9.5 pounds of cheese during the year, 3 per cent more than in 1963.

American cheese, for example, set a new per capita consumption record in 1964. And it wasn't alone. Consumption of Italian, Swiss, brick and Munster varieties was higher than a year earlier.

The records indicate we ate more milk in frozen dairy products during 1964 than in 1963. On the average, we consumed 52.7 pounds of milk in this form in 1964, compared with 51.9 pounds in 1963.

The figures represent a slight increase in the amount of ice cream we ate—about 1 per cent more than a year earlier—to 18.2 pounds. But they also show a 7 per cent increase in ice milk consumed—an average of 6.4 pounds a person in 1964. (27)

## Our Per Capita Fiber Consumption In '64 Topped All Years Since '51

Consumers used more fibers per capita last year than in any year since 1951.

Domestic consumption of all wool, cotton and man-made fibers during 1964 was 40.9 pounds per capita, 5 per cent above 1963. Use of cotton and manmade fibers was up; use of wool, down.

Cotton is still by far the major fiber but the 22.6 pounds per capita used in 1964 was only 4 per cent above use in 1963 and less than in 1962. The greatest gains were made by man-made fibers—rayon and acetate and especially the noncellulosic synthetics such as nylon. Man-made fiber use was a record 15.7 pounds per capita, 11 per cent above 1963.

Per capita domestic use of wool dropped 14 per cent from 1963 to 2.55 pounds in 1964; apparel wool dropped, 11 per cent to 1.77 pounds. Use of carpet wool was 0.77 pound, 20 per cent below 1963. (28)

## Retail Food Store Stocks Studied By ERS for Office of Civil Defense

The Office of Civil Defense and the Economic Research Service have cooperated on a number of studies of our food supply in recent years. A study originally conducted in 1957 of food and beverage stocks held by retail food stores throughout the nation (see March 1963 Farm Index) has just been revised and updated.

The methodology behind the estimates of stocks has been changed to make the figures much more useful to local civil defense officials. Supplies are shown in calories and measured in terms of their emergency feeding capabilities for each county and independent city (such as Baltimore, Md., and Alexandria, Va.) in 48 of the 50 states. Also, the per capita supplies have been updated to 1963 population estimates.

Single copies of "Estimated Number of Days' Supply of Food and Beverages in Retail Food Stores, 1963—A Civil Defense Study," MRR-713, may be obtained free by writing to the Division of Information, Office of Management Services, U.S. Department of Agriculture, Washington, D.C. 20250. (29)

## Maryland's Rural Homemakers Don't Switch Stores in Response to Ads

Recently 578 Maryland homemakers attending a "college week for rural women" were surveyed by ERS and the Cooperative Extension Service of the University of Maryland to find out where, how often and for whom they buy their groceries.

Nearly two-thirds of the women were from small towns or farms, the rest from cities over 25,000 population. Since this wasn't a random population survey, the findings probably don't reflect the needs and views of the average American housewife. For in-



stance, there were doubtless more women without children living at home in the survey group than is true for the national population.

However, many homemakers across the nation may find their own shopping habits similar to the composite shopper drawn from the survey answers:

—She lives in a small town, is a full-time housewife and buys food for herself and one other adult.

—She shops alone, without her husband or others, and shops only once a week.

—She uses a shopping list and buys most items at one store.

—She shops at one store mostly because of convenience, price and quality of food. Trading stamps, charge accounts and similar factors have little influence on her.

—She spends between \$10 and \$20 a week at the grocery store and estimates that 90 per cent or more of the items she buys are food, as opposed to soap, napkins and other nonfood items.

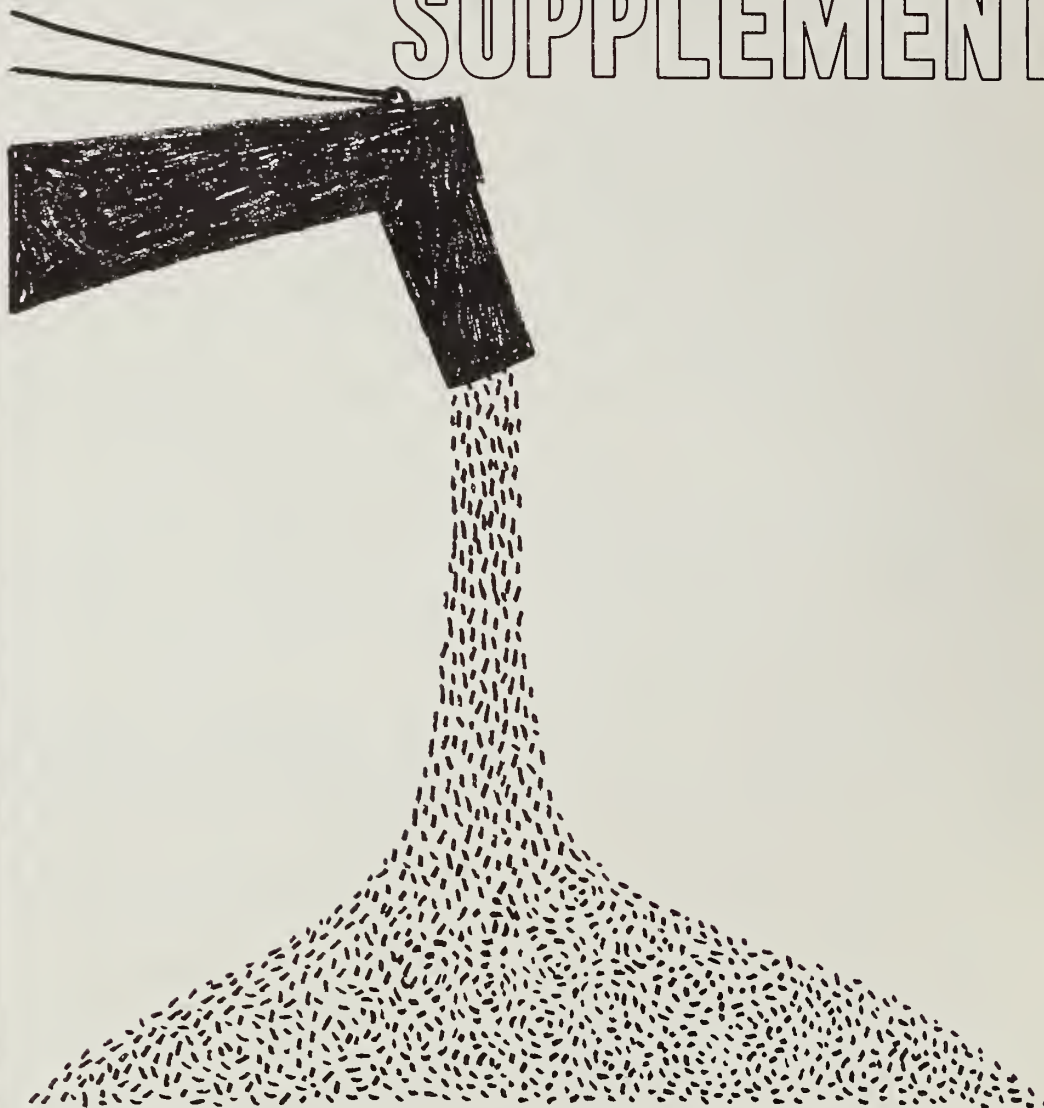
—She takes the local newspaper which runs food ads on weekends or more frequently. And she says the ads usually include sale items. However, only once in a while does she change from her usual store to take advantage of sales in another.

—She finds such things as food prices, quality, variety and packaging no problem in shopping for groceries. Her most frequent problem, and even this is relatively minor, is in planning meals.

On most points the farm wives surveyed agreed with their small-town counterparts. However, there were a few differences in family needs and shopping habits.

For example, more farm wives had children living at home, often including teenagers. They tended to shop less often than homemakers either in small or large towns, but their husbands more often helped with the shopping. Finally, farm wives were less likely than town residents to use newspaper ads as shopping guides. (30)

# SPECIAL GRAIN SUPPLEMENT



Grain is and always has been a basic feed for men and animals. Wheat and barley were domesticated in the first area of agricultural development, southwestern Asia. Rice was developed later in Asia and sorghum and millets in Africa. Corn, or maize, is the most important crop of American origin and was likely first grown in the highlands of Mexico. • Even today grain provides directly about half the calories of the world's 3 billion people. A large portion of the other half comes indirectly from grain—the grain that has been converted into meat, milk, eggs and other animal products. • The giants in grain production today are the United States, the Soviet Union and Communist China, which together grow more than two-fifths of the world's food and feed grains. The United States produces about 170 million tons of grain a year, almost one ton for each inhabitant. We rank No. 1 in world production of corn and grain sorghums and second in production of wheat and barley. • Grain production in the U.S. far surpasses American's capacity to consume. About one ton out of every five is exported, making us the world's leading grain exporter. Grains earn about \$2 billion for us each year abroad. U.S. shipments of wheat and flour account for about \$1.3 billion annually and have been about 40 per cent of the world's total exports of these commodities in recent years. Our share in international trade of corn is even higher—slightly more than 50 per cent of total world exports. Corn earns nearly \$500 million a year in foreign markets. Moreover, we account for more than 75 per cent of total sorghum exports and 30 per cent of the world's barley exports. The U.S. ranks third in rice exports, averaging over 900,000 tons a year, even though we produce only about 1 per cent of the world's rice. (31)



**TOP EXPORTERS:** It's hard to compare prices among countries because of fluctuations in exchange conversion rates, the case with Argentina, and other reasons. Best available data show that since 1950 domestic wholesale prices for wheat have been consistently higher than farm support prices. Except for France, support prices haven't exceeded world import prices.

Country	Average 1950-53	Average 1955-59	1961	1962	1963	1964
U.S. dollars per bushel						
<b>Argentina</b>						
Support price	0.76	0.78	1.41	1.28	1.45	1.42
Domestic price	0.71	0.83	1.62	1.38	n.a.	n.a.
Export price	0.85	1.03	1.83	1.65	n.a.	n.a.
<b>Canada</b>						
Support price	1.76	1.66	1.81	1.54	1.63	n.a.
Domestic price	1.84	1.73	1.80	1.82	n.a.	n.a.
Export price	1.84	1.73	1.80	1.82	n.a.	n.a.
<b>Australia</b>						
Support price	1.47	1.45	1.76	1.77	1.61	1.63
Domestic price	1.23	1.58	1.77	1.78	n.a.	n.a.
Export price	1.84	1.53	1.62	1.60	n.a.	n.a.
<b>United States</b>						
Support price	2.14	1.94	1.79	2.00	2.00	1.30 <sup>1</sup>
Domestic price	2.33	2.10	2.07	2.23	2.12	1.61
Export price	1.99	1.69	1.71	1.75	1.74	1.77
<b>France</b>						
Support price	2.60	2.31	2.24	2.33	2.38	2.45
Domestic price	2.84	2.49	2.53	2.53	2.53	n.a.
Export price	2.27	1.63	1.72	1.55	n.a.	n.a.

<sup>1</sup> In addition to the national support price of \$1.30, cooperating U.S. farmers received 70 cents per bushel for 45 per cent of the crop consumed domestically and 25 cents per bushel for 45 per cent exported, bringing the weighted average support level to \$1.72.

## THE IMPENDING CHECKMATE

### *Host of conflicting price structures in importing nations threatens to disrupt the world grain trade*

Like opposing players in a game of chess, the world's major grain exporting and importing countries have opposing strategies but the same basic goals—higher income for farmers and a stronger national economy.

Major exporters such as the United States, Canada, Australia and Argentina want to sell more grain abroad. To do this they encourage exports through a number of incentives—export subsidies, export insurance guarantees, concessional export programs and government trading.

Major importers, like the six-member Common Market, along

with the rest of Western Europe, want to cut back imports and increase production at home. To further these objectives importing nations support the prices of domestic grain.

With larger farms and more efficient methods, the exporting nations can grow and sell grains abroad at a lower price than the farmers in many purchasing nations can produce grains. Thus, to insulate producers against foreign competition many importing nations discourage foreign purchases through a number of restraints on trade—import licenses and quotas, domestic milling

quotas, tariffs, import fees or levies, foreign exchange regulations and government import monopolies.

Some grain importing countries also subsidize consumer prices. This occurs in the less developed world—Latin America, Africa and Asia—where food shortages recur frequently and consumer prices, left alone in a free market, would soar.

In sum, the world grain trade is carried on in an environment that includes supports to keep domestic farm prices high, subsidies to keep consumer prices low, restrictions to keep imports down and incentives to expand exports.

The result is a maze of conflicting national price and trade structures, many of them unrealistic in light of world grain prices. In practice, "world" prices are actually import prices at West European ports.

ERS economists point out that, with surpluses growing, the restraints on trade imposed both by individual importing nations and by regional trade unions such as the European Common Market threaten to disrupt the world grain market in the years ahead. This would certainly affect the United States since we are the top exporter of wheat (44 per cent of world exports in 1964) and feed grains (51 per cent of world exports).

ERS researchers present the points of conflict in a new study and suggest closer international cooperation to ease them.

The study analyzes the price structures in the five chief exporting countries, showing that since 1950 domestic wholesale prices for wheat have exceeded farm support prices in most years. In 1962, for example, the difference in Canada was 18 per cent; United States, 12 per cent; France, 9 per cent; and Argentina, 7 per cent. The support and wholesale prices were about equal in Australia (see table above). And with the excep-



tion of France, support prices in exporting countries haven't exceeded world import prices.

However, analysis of farm support prices for wheat in 34 importing countries shows most of them to be much higher than those of the five major exporters. Whereas the "effective" U.S. support price for cooperating farmers in 1964 was \$1.72 a bushel, that of West Germany was \$3.01; Japan, \$3.40; Switzerland, \$4.36; and Italy, \$2.87 (see selected countries in table below).

Support prices for wheat in most less developed importing countries were a shade lower but still considerably above the levels in the five exporting nations. In 1964 they ranged from \$1.67 in UAR (Egypt) to \$3.02 in Spain.

A study of c.i.f. (import) prices of wheat at U.K. and Japanese ports of entry shows they have been remarkably stable over the 1953-64 period. But when compared with domestic support prices in importing nations, they illustrate an important point of conflict in the world grain trade. Support prices maintained by most importing countries are higher than world wheat import prices at U.K. and Netherlands ports, even with marketing and distribution costs added. The situation is similar for feed grains, somewhat less marked for rice.

Turning to Western Europe, the study discusses the differing policies of the Common Market and the United Kingdom. The Common Market, of course, includes France, West Germany, Italy, Belgium, Luxembourg and the Netherlands.

The Common Market's new grain policy, planned to be fully effective July 1967, is a compromise between the highest and lowest domestic price of members, which works out to be a compromise between West Germany's high and France's low. However, the target or wholesale prices agreed on are considerably higher

than world prices. Assuming that c.i.f. (import) prices in 1964 prevail, by 1967 the unified target prices for wheat and feed grains will exceed current world prices by 50 to 70 per cent.

In other words, while U.S. and other exporters deliver grain to Rotterdam and other Common Market ports at world prices, they must pay an import levy of 50 to 70 per cent before the commodity moves into the marketplace. Purpose of the levy is to bring the price of imported grain up to that received by farmers in Common Market countries. Basic goal, of course, is to give Common Market farmers the incentive to expand production, thus reducing the area's need for imports.

Since the mid-1950s, the U.K. grain policy has differed greatly from those on the continent. U.K. farmers sell grain at prevailing market prices. Market prices are influenced by import prices and imports (except for duties on feed grains from non-Commonwealth countries) have entered the country freely at world prices.

To protect British farmers, London has set up price guarantees and given farmers a payment equal to the difference between free market prices and these guarantees.

Recently the British government fixed minimum import prices for wheat and feed grains and revised its domestic grain price guarantee policies. These actions are to provide a hedge against a possible drop in world grain prices and over-production at home.

There is one major difference between the new U.K. and Common Market grain import policies. Britain's minimum import prices are near or below c.i.f. import prices at West European ports; the Common Market's threshold prices, used to calculate import levies, are considerably above c.i.f. import prices.

Under existing policies, the Common Market's levies on grain imports from nonmember countries are considerably higher than probable U.K. levies—and more objectionable to the major exporting countries. (32)

**TOP IMPORTERS:** Farm support prices for wheat in most importing countries are considerably higher than those in exporting countries. The United Kingdom with its relatively free market is the one major exception. Support prices of less developed importers are a shade under those of the developed nations but, in general, still higher than in exporting nations.

Country	1950-54 average	1955-59 average	1960-64 average	1963	1964
Support prices in U.S. dollars per bushel					
<b>Developed</b>					
Austria	2.46	2.63	2.60	2.59	2.59
Belgium*	2.49	2.53	2.61	2.65	2.65
Italy*	2.96	2.90	2.80	2.87	2.87
Japan	2.44	2.72	3.14	3.26	3.40
Netherlands*	1.76	2.02	2.44	2.53	2.71
Switzerland	4.15	4.19	4.31	4.36	4.36
United Kingdom	2.25	2.17	2.01	1.99	1.99
West Germany*	2.61	2.67	2.91	3.01	3.01
<b>Less developed</b>					
Brazil	2.66	2.31	2.50	3.14	2.20
India	—	1.71	2.24	2.14	2.84
Morocco	n.a.	2.10	2.15	2.15	2.26
Pakistan	1.46	1.75	2.07	2.07	2.07
Spain	n.a.	2.55	2.63	2.79	3.02
Turkey	2.73	2.21	1.99	2.21	2.21
UAR (Egypt)	1.94	2.08	1.83	1.67	1.67
* Member, European Common Market.					



## CORN YIELDS PER HARVESTED ACRE FOLLOW UPWARD TREND

	1963	1964	1963-64 Average
	Bushels		
East central Illinois (nine counties)			
Area average	98	87	92
Accounting service farmers:			
All	114	104	109
Top 20 per cent	130	122	126
West central Illinois (nine counties)			
Area average	80	81	81
Accounting service farmers:			
All	94	95	95
Top 20 per cent	113	108	111

Grain Yields March Onward, Upward  
Even Where Hybrids Balk, Rains Lag

Ever since the colonists first saw Indians planting maize, a fish in each hillock to insure output, American farmers have successfully encouraged ever more generous yields from the grains of the land. Here are a few examples of what has been done, what may be accomplished:

*Corn.* In the 1920s and 1930s, the average yield in the U.S. was around 25 bushels per harvested acre. By the 1940s, the average had moved up to 30 or 35 bushels and by the 1950s, to 40 or 50. The crop of the last four years, 1961-64, has averaged 64 bushels an acre and the end isn't even in sight.

In central Illinois, for example, the average corn yield per harvested acre in the area is already around 80 or 90 bushels. And several hundred farmers, a group belonging to a farm accounting service, get yields of 95 to 110 bushels, 15 to 20 bushels an acre above the area average.

Still the records mount. The leading 20 per cent of the accounting service farmers average 30 bushels above the area level.

Scientists and leading operators in the area have their sights on even higher yields—125, 150, as much as 160 to 180 bushels an acre. It's probably safe to say

that in just a few years, many of the better farmers will be getting field-run yields of 150 to 165 bushels of corn per acre.

*Wheat.* Because wheat grows primarily in the dry, low rainfall regions, generally without irrigation, the potential for increased yields has long been considered less spectacular than it is for corn. Yet even in some dryland areas wheat has responded noticeably to fertilizer applications.

In the two decades between the first and second World Wars the U.S. yield of wheat averaged around 13 or 14 bushels per harvested acre, little more than a bushel above the average during the Civil War period.

But in the 1940s, wheat yields began to edge up to 16 or 17 bushels. And in 1950-59, they ran about 20 bushels. In the first four years of this decade, yields of wheat have been around 25 bushels.

In the Garden City, Colby, Hays area of western Kansas, the average yield of wheat after fallow is 22 bushels. But the leading 10 per cent of the farmers in the area are getting yields of 30 bushels. And the new hybrid wheat should push this up another 25 per cent to near 40 bushels.

Not every farmer will get that far in the next few years, but the top managers should.

In annual cropping regions, such as the Palouse area of Wash-

ington, the new short-stemmed wheat variety, Gaines, has upped the expected yield 15 to 20 bushels an acre, an increase of about 25 per cent. Area yields are now around 60 bushels but some farmers are getting 90.

Gaines wheat, however, hasn't proven itself so adaptable to the drier, summer fallow areas.

Even the driest wheat-fallow areas, where rainfall is only eight or nine inches, have managed to up their wheat yields chiefly through improved tillage.

Irrigation, of course, makes a vast difference. Irrigated wheat in the Columbia Basin project commonly yields up to 140 bushels an acre.

*Barley and grain sorghums.* New varieties of barley in the Pacific Northwest may increase average yields 10 to 20 bushels an acre, raising the yield in the annual cropping area from a level of 50 bushels to 70, in the wheat-fallow area from 35 to 45 bushels.

Grain sorghum hybrids, with about 25 per cent greater yields, have now largely replaced the open pollinated varieties in the main producing areas. In the Garden City, Colby area, sorghum yields now average about 25 bushels an acre in rotation after wheat on the better silt loam soils. The best 10 per cent of the farmers are getting yields of about 35 bushels. And yields of 75 to 80 bushels are common enough with a heavy irrigation.

*Rice, oats and rye.* Yields for rice have increased a spectacular 60 per cent in the last 10 years. The average yield is now around 4,000 pounds an acre, compared with 2,500 pounds 10 years ago.

The story for oats is another matter. Despite a 35 per cent increase in yields in the past 10 years, oats are losing out to other grains; total output is off.

For such relatively minor grain crops as rye, increased yields have come about mainly because of the general improvement in farming. (33)



## Grain Holdings in Storage Facilities Continue the Decline Begun in 1962

Commercial storage capacity for grain in 1964 was running to about 5.4 billion bushels. With an allowance for working space (for turning grain and moving it in and out of storage), the figure is reduced to 4.5 billion bushels of usable storage capacity.

Inventories, however, were only 2.8 billion bushels, about 51 per cent of capacity. Ten years earlier inventories as a per cent of capacity stood at 43 per cent. By 1961 the percentage had risen to 69 per cent of total available storage space.

From 1951 to early 1962, commercial capacity for storing grain off the farm more than doubled, going from 2.2 to 5.5 billion bushels. There has been only a slight drop in capacity since then.

By contrast, grain inventories dropped by 18 per cent between 1961 and 1964, going from 3.4 to 2.8 billion bushels.

These reduced carryover stocks have also had a direct effect on the seasonal use of storage capacity;

the difference between the year's high and low is much greater than in the past.

For example, stocks filled nearly 63 per cent of the storage space in January 1964; dropped to less than 41 per cent by July of the same year.

Nearly one-third of all storage for grain in the U.S. is in the wheat-producing Plains states, from Colorado and Kansas north. Nearly half of this amount is in Kansas. Nearly two-thirds of the storage capacity in the Plains area is at country elevators.

Another third of total U.S. storage capacity is in the midwestern corn and soybean belt, with 58 per cent of capacity in country elevators, 42 per cent in terminals.

The Southern Plains provide about a fourth of U.S. storage space for grain—mostly grain sorghum. Texas leads the area in capacity.

The West has 8 per cent of total storage capacity with most of it serving the area's wheat and barley production. Three-quarters of the area's capacity is at country elevators; much of the remainder is at a few port facilities. (34)

## Country Elevator of 1980 to Offer More Storage Space, Custom Services

What will the typical country elevator of 1980 look like in Montana and North Dakota? Although it's impossible to get a perfect picture, economists in the Montana Agricultural Experiment Station and in ERS have analyzed recent trends in grain elevator operations to get a rough idea of what tomorrow's elevators will resemble in the two-state area.

By 1980 more than 75 per cent of these elevators will have a storage capacity of at least 225,000 bushels. In 1963 less than 10 per cent of the country elevators could store this volume of grain or more.

Many of the country elevators will have relocated in county seats or more important towns so that they will be in the heart of rail and road networks.

Though they will be larger in volume, future grain elevators are apt to be fewer in number. By 1980 economists figure there will be only about 1,000 firms operating in Montana-North Dakota, 200 fewer than in 1961. Many

**INVENTORIES INCHING DOWN:** After hitting a peak in 1961, average grain inventories have been dropping steadily. An associated trend is the percentage of storage capacity in use. From 43 per cent of capacity in use in 1954 to nearly 69 per cent in 1961, the share has dropped to 51

per cent in 1964. These commercial facilities do not include bins owned by the Commodity Credit Corporation, grain stored in "mothball" ships under government control or warehouses storing only rice, peanuts, cottonseed and dry beans and peas.

Year	Storage capacity		Yearly average of grain inventories	Share of total capacity used
	Total commercial <sup>1</sup>	Approved for U.S. government grain storage <sup>2</sup>		
	1,000 bushels		1,000 bushels	Per cent
1951	2,175,942	—	—	—
1952	—	1,240,277	858,904	—
1953	—	1,340,893	975,971	—
1954	2,873,639	1,904,766	1,222,132	42.5
1955	—	1,997,458	1,554,434	—
1956	—	2,565,510	1,736,185	—
1957	3,500,513	2,841,243	1,805,440	51.6
1958	—	3,528,255	2,165,745	—
1959	—	4,198,178	2,798,354	—
1960	—	4,467,797	3,130,413	—
1961	4,993,280	4,883,137	3,430,639	68.7
1962	5,472,160	4,790,898	3,197,228	58.4
1963	5,471,230	4,678,419	2,896,361	52.9
1964	5,438,150	4,675,908	2,759,842	50.7
1965	5,423,160	—	—	—

<sup>1</sup> As of January 1. <sup>2</sup> As of December 31.



small firms (with storage capacities under 100,000 bushels) unable to compete on a cost basis with the larger firms may either be absorbed into other firms or simply go out of business.

By 1980 grain elevators, even the larger ones, will likely be faced with much stiffer competition than today. Economists anticipate further concentration of production on fewer but larger farms—and better transportation will give producers a wider choice in where they sell their grain.

To attract these large customers, many grain elevators in 1980 will offer some custom services—such as seed cleaning and treating and feed grinding and mixing. They also will sell fertilizer, farm equipment and other supplies, depending on community needs.

A few elevators may even develop into “farmers’ shopping centers” with all the facilities for marketing grains and livestock and offering complete lines of farm equipment and some productive inputs. (35)

## Shift From Farm Use to Cash Crop Raises Questions on Marketing Grain

In the late 1930s farmers sold only about a quarter of their feed grain off the farm. The greater part of their production was used to feed their own livestock. Today farmers sell about half their production of feed grain.

In 1963 and 1964, corn ranked next to cotton as a cash crop, returning about \$2 billion. With the increased volume of feed grains moving into market channels, there is a greater emphasis on the need for additional research in the many phases of grain marketing.

Key areas for more research are: *Regional problems in marketing.* How have changes in regional production affected transportation needs, marketing services and prices for grains?

Some work has been done on the relation between production per animal unit in feed-surplus areas and feed-deficit areas and prices in both areas.

Commercial processing and dis-

tribution of formula feeds requires more transportation and handling than farm or locally processed feeds. More information is needed on how to reduce unnecessary costs of transportation, handling and processing of grains.

The problem of getting a satisfactory balance between livestock needs and feed production in various regions is so complex that it has been studied only superficially as yet.

*Size and management of the stockpile.* Some experts say there should be a reserve supply of feed grains; few agree on how big the reserve should be. In the past decade carryover stocks have ranged from less than a third to more than half of annual production.

More research could give a better understanding of the effect of reserve stocks on stability of use and seasonal and year-to-year variations in prices of grains.

*Competition between grains.* Despite linear programming and the information it provides on the lowest cost rations for livestock and poultry, wide differences in the price of grains still exist. In 1959-62, oats carried a price 7 to 13 per cent above corn pound-for-pound. The difference was greater on a feed-value basis.

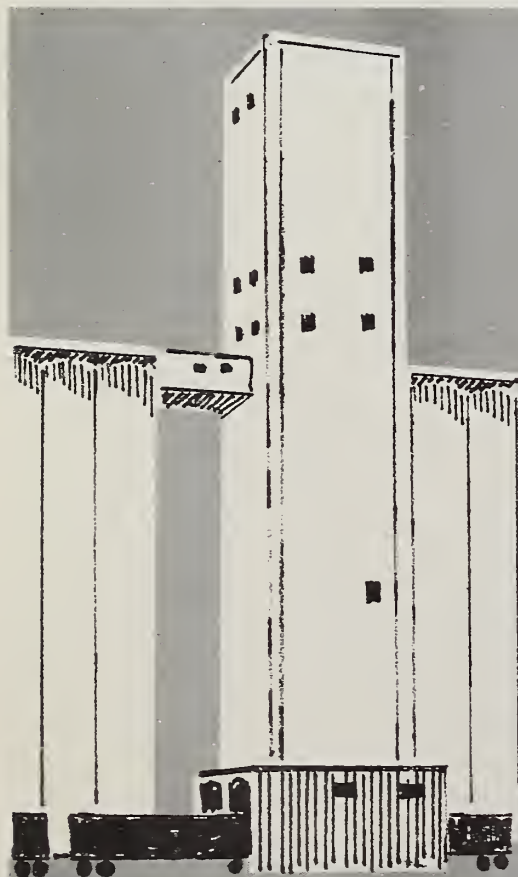
More information on the relative prices and perhaps wider distribution of such information could reduce the differences.

*Export markets for grains.* The big need in the marketing area is for more information on the response to price changes for feed grains in major importing countries, as well as to changes in available world supplies.

The expanding demand in a number of important consuming countries has resulted in a marked increase in feed grain exports in the past 15 years. Unlike the U.S., a number of these countries have experienced a more rapid rise in requirements than in feed grain yields since World War II. (37)

### MAJOR CHANGES in grain marketing have taken place in recent years:

1. An increase in off-farm sales.
2. An increased volume of feed manufactured off farms.
3. An increase in exports.
4. A high, but decreasing, carryover of wheat and feed grains in the last three years.
5. An increased percentage utilization of flour milling capacity.
6. A sharp decrease in the number of both independent and line (one of a group under the same management) country elevators; an increase in co-op country elevators; and growth in importance of subterminal elevators (large elevators which accumulate grain from country elevators but are located outside major terminal markets).
7. A shift to the South and West in the location of major terminal markets.
8. A decline in the number and an increase in the average capacity of grain processing plants.
9. A shift in the location of grain processing facilities from production areas to the Southeast.
10. An increase in the degree of vertical integration (for example, a country elevator, terminal elevator and flour mill all under the same ownership). (36)





## Country Mills Cite Lower Rail Rates For Wheat Than Flour as Handicap

Competition for grain traffic among the railroads, truckers and barge lines affects others in the grain trade, including the nation's millers. Due partly to this competition, some millers located in grain producing areas are indicating they are not able to compete with millers closer to the big cities.

Transportation charges are one of the reasons. With recent changes in the grain rate structure, it now costs more to ship grain products, including flour, by rail from some locations than it does raw grain. As a result, some millers near the city bakeries and retail outlets for flour may have a new transportation advantage over those located nearer the production areas.

In their efforts to retain—and regain—grain traffic, the railroads are adjusting the price and service structure developed over the past 100 years for grain transportation.

From the opening of the Plains and western states in the late 1800s to the advent of World War II, railroads were the only practical way to ship grain long distances overland. At the request of shippers, the railroads gradually added special services—in-transit storage, stopovers for milling, circuitous routing, etc.

Costs of these services were incorporated in the shipping charge. But the charge was about the same whether the raw grain moved directly, say, from Kansas City to New York, or was stored temporarily in St. Louis, milled in Buffalo and the flour shipped to New York.

After World War II better highways and waterways and increasing rail grain rates spurred the growth of truck and barge transportation. However, since these carriers lacked the railroads' special service facilities, theirs was strictly point-to-point service.

This often meant cheaper rates, which attracted more and more grain business.

In the late 1950s the railroads began to fight back. In addition to reducing their usual rates, they lowered their charges for moving grain by limiting or completely eliminating intransit privileges. In the Pacific Northwest, for example, rail rates for limited in-transit service run about 4 cents less per bushel than the full privilege rate. This lower rate is competitive with truck and barge rates.

The lower, nontransit rail rates apply only to raw grain and don't allow intransit processing privileges. And these low rates result in lower transportation costs for shippers of raw grain. For instance, 2,800 pounds of raw grain, the amount needed to make a ton of flour, can be shipped from St. Louis to Atlanta for \$5.40 using the flat 450-ton minimum rate. It would cost \$12.20 to ship a ton of flour using the normal proportional rate. This saves \$6.80 by shipping wheat instead of flour, or 34 cents for each 100 pounds of flour. In addition, there are by-products that might also move from St. Louis to Atlanta that are included as part of the wheat movement. On the other hand, any reshipment of by-products back to the Midwest would offset some of the savings.

While rail, truck and barge carriers will continue to compete for raw grain business, railroads will still carry nearly all processed goods.

Under present laws for-hire truckers are not allowed to haul processed grain products under the "agricultural exemption" of the Interstate Commerce Act. This is the provision that exempts truckers from rate and other economic regulation when they haul raw agricultural commodities. Regulated for-hire trucking firms haven't shown much interest in hauling grain products at regulated rates. (38)

## Shift From Rails to Roads Occurs In Shipping North Central Grain

Between 1958 and 1963 a noticeable shift from rails to roads occurred for outbound grain shipments from North Central country elevators.

Trucks accounted for slightly more than 40 per cent of all grain shipments from country elevators in 1963, up about 10 percentage points from 1958, while rail traffic decreased by 11 percentage points, dropping to 57 per cent in 1963. A small increase in barge traffic made up the difference.

The increase in importance of truck and barge shipments relative to rail shipments was most evident for corn, soybeans, wheat and oats.

Transport rates, of course, were the most instrumental factor in the switch. During 1958-63 the level and structure of rail rates were undergoing considerable change—and often trucks and barges were able to quote lower rates or offer better services than the railroads on some grain traffic. The presence or absence of backhaul opportunities also affected truckers' activities. And still another factor which played a part was the program to improve the highway and waterway systems. These now connect grain surplus and deficit areas linked only by railroads before.

Nevertheless railroads did not sit idly by, watching traffic continually dwindle during this five-year period. By 1963 most railroads had modified rates and services in order to regain or share in grain traffic previously lost. In many areas rail rates were lowered. A rate index compiled by ERS dropped from 101 in 1958 (1957-59=100) to 96 in 1963. And in at least two areas of the North Central region—northern Minnesota and southern Ohio—trucks' share of outbound grain traffic decreased, largely because of new rates offered by rails. (39)



## Growing Economy Escalates Markets For Cereal Starch in Industrial Use

While cereals lose ground on the dinner tables of the nation, they have been opening up new markets, fending off competition in a wide range of nonfood uses by industry.

Though total use of cereals going into foods is up only 7 per cent since 1950 and per capita use is down 13 per cent, industrial use of cereals has gone up 60 per cent.

Wet-milled corn makes up about 81 per cent of the total industrial cereal; dry-milled corn and sorghum products account for about 11 per cent and wheat products about 8 per cent.

The big industrial product from cereals is starch—and it gets into just about every corner of the economy, from binder in aspirin tablets to an ingredient in refining aluminum ore. As long as cereal starch can hold onto its share of markets, it tends to advance right along with the economy.

With a gross national product expected to reach \$750 billion by 1970, shipments of starch might well run to about 2.9 billion pounds, compared with 2.1 billion in 1960.

Nearly two-thirds of cereal starches used industrially end up in paper or paper board.

Textiles are the second biggest outlet for cereal starches, amounting to about a sixth of total industrial use. But most starch is used with cotton fabrics and cotton has been having a hard time maintaining its portion of the market, what with the competition from synthetics. Furthermore, synthetic resins used with cotton have also cut into the textile market for cereal starch.

Annual shipments of starch to the textile industry have leveled off at about 300 million pounds in recent years and it doesn't look as if there will be any increase.

Cereal starch also gets plenty

of competition from other farm products. Guar, locust bean and tamarind seed gums, for example, compete for the paper market. But a far more serious threat to domestic starch comes from imported tapioca. Imports of duty free tapioca starch increased from 62 million pounds in 1954 to a high of 307 million in 1961, and were at 263 million pounds for the year in November 1964.

Based on a 1958 Tariff Commission estimate, about four-fifths of all imported tapioca starch ends up in paper sizing and adhesives. Prices of industrial grade tapioca starch currently average 1 to 1.5 cents a pound less than cereal starches in coastal areas. (40)

### *Cereal's Slip Showing*

Between 1950 and 1964 per capita consumption of cereals and many of their starchy substitutes was on the decline. Per capita consumption of wheat (except for semolina flour) has dropped 15 per cent to about 110 pounds. This drop was accompanied by declines of 55 per cent for sweet-potatoes, 50 per cent for dry peas, 32 per cent for cornmeal and hominy, 13 per cent for dry beans and 7 per cent for unprocessed potatoes.

Per capita consumption of breakfast cereals remained nearly steady over the 15-year period. Consumption of semolina flour, which is used along with farina flour in such products as spaghetti and macaroni, declined during the early 1950s but has increased in recent years to about recover the decline.

Rice alone has proved the exception to the above trends. In 1964 per capita consumption was nearly a third greater than 15 years earlier, up from 5.1 pounds in 1950 to 6.8 pounds last year. One reason for the big gain is USDA donation programs which have distributed increasing amounts of rice since 1955. However, another reason for increased use is: We now have two new states. High rice consumption in Hawaii increased the 50-state average about a third of a pound over the 48-state average. (41)

## Amount and Kinds of Cereals Eaten Often Depend on Regional "Likes"

As U.S. consumers' purses have gotten fatter, per capital consumption of cereal products and many of their "starchy" substitutes has declined. But while the amount of cereals and starches consumed often reflects the affluence of U.S. families, regional dietary preferences are often more important.

The results of the 1955 household food consumption survey point up the tremendous diversity of regional diets among families at the same income levels. (A new survey is under way but results will not be available until next year.)

At incomes of \$2,000 or less, families in the South purchased twice as much flour, three times the dry beans, four times the rice, five times the dried peas and over 100 times as much cornmeal and hominy grits on a per capita basis as did northeastern families earning comparable incomes.

On the other hand, the same northeastern families bought double the amounts of bread and breakfast cereals and four times the macaroni, spaghetti and noodles as did families in the South.

In most areas in the U.S. diets shifted from low-value cereal products (such as cornmeal and hominy) to higher priced foods (like bread and bakery products) as family incomes rose. But even within higher income brackets, \$6,000-\$8,000, the regional preferences continued to show up.

Families in the South, even when they could afford to do otherwise, continued to eat more rice, cornmeal and hominy than families elsewhere earning comparable incomes. Use of breakfast cereals and macaroni, spaghetti and noodles was generally lower in the South than in other areas of the U.S. (42)



AGRICULTURE OF NORTHERN AFRICA. C. J. Warren and C. Santmyer, Foreign Regional Analysis Division. ERS-For. 128.

Agriculture has a dominant role in North Africa's national programs for economic improvement. This report analyzes the relationship between the region's population and its other natural resources and considers the organization of these resources and their effect on farm output.

U.S. AND RUSSIAN AGRICULTURE—A STATISTICAL COMPARISON. G. S. Brown, Foreign Regional Analysis Division. ERS-For. 127.

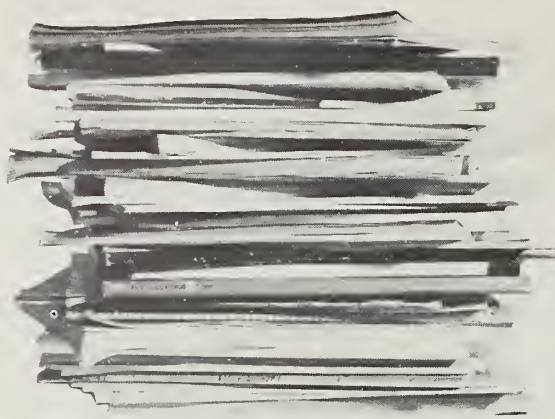
This report presents comparative data on inputs, farm organization and agricultural output in the United States and the Soviet Union. Except for historical series on area, yield and production of grain, the comparison is limited to 1963. (See July 1965 Farm Index.)

TERMINATION OF THE BRACERO PROGRAM: SOME EFFECTS ON FARM LABOR AND MIGRANT HOUSING NEEDS. R. C. McElroy and E. E. Gavett, Farm Production Economics Division. AER-77.

Discontinuance of P.L. 78, which formerly enabled the entry of Mexican workers, has caused serious concern in agricultural and related sectors. Two chief problems involve determination of replacements for bracero labor and housing requirements for these replacements. (See July 1965 Farm Index.)

A SELECTED LIST OF ECONOMIC RESEARCH SERVICE REPORTS CONTAINING ECONOMIC INFORMATION ON AGRICULTURE OF FOREIGN COUNTRIES AND FOREIGN AGRICULTURAL TRADE OF THE UNITED STATES. Compiled by the Economic Research Service. Unnumbered.

This bibliography includes all publications of more than temporary importance produced or sponsored by the Development and Trade Analysis Division and



## recent publications

*The publications listed here are issued by the Economic Research Service and cooperatively by the state universities and colleges. Unless otherwise noted, reports listed here and under Sources are published by ERS. Single copies are available free from The Farm Index, OMS, U.S. Department of Agriculture, Washington, D.C. 20250. State publications (descriptions below include name of experiment station or university after title) may be obtained only by writing to the issuing agencies of the respective states.*

the Foreign Regional Analysis Division during the period January 1, 1961, through April 30, 1965.

WHITE AND NONWHITE OWNERS OF RURAL LAND IN THE SOUTHEAST. R. F. Boxley, Jr., Resource Development Economics Division. ERS-238.

Diversification of one-crop agriculture, innovations in agricultural production and increasing industrialization have strongly affected ownership of rural land in southeastern United States. (See July 1965 Farm Index.)

OUTPUT PER MAN-HOUR IN DISTRIBUTING FOODS OF FARM ORIGIN. W. H. Waldorf and H. F. Gale, Marketing Economics Division. Tech. Bul. 1335.

Output per man-hour employed in distributing foods of domestic farm origin increased at an average rate of 2.5 per cent per year from 1929 to 1958. The increase was significantly greater for the wholesaling and retailing components.

SOVIET FOREIGN AGRICULTURAL TRADE, 1962-63. Foreign Regional Analysis Division. ERS-For. 120.

Agricultural trade in calendar years 1962 and 1963, the most recent years for which Soviet trade data are available, showed exports increasing during the first year and then decreasing. Meanwhile, imports decreased and then increased to a peak in 1963 because of large wheat imports.

RECENT DEVELOPMENTS IN TESTING AND PRICING COTTON FOR FINENESS AND STRENGTH. M. R. Cooper, Marketing Economics Division, and W. F. Harris, University of Texas. MRR-699.

This report was designed to provide information that would be useful in more effectively pricing cotton on the basis of quality elements other than grade and staple length.

RECEIVING CALIFORNIA - ARIZONA FRESH FRUITS AND VEGETABLES BY RAIL AND TRUCK. R. M. Bennett, Marketing Economics Division. Supplement to MRR-673. Unnumbered. (See July 1965 Farm Index.)

Approximately one-third of California-Arizona's annual output of fruits and vegetables is carried by rail or truck to other states as fresh produce. In recent years, this traffic has averaged around 330,000 carlot equivalents annually—mostly lettuce, oranges, potatoes, grapes and cantaloups. It amounts to nearly half of the country's fresh fruit and vegetable volume moved in state-to-state commerce by the two carriers. (See July 1965 Farm Index.)

CONVERSION FACTORS AND WEIGHTS



AND MEASURES FOR AGRICULTURAL COMMODITIES AND THEIR PRODUCTS. Compiled by a USDA Task Force on Conversion Factors and Weights and Measures. Statis. Bul. 362.

The tables in this report were compiled to provide a manual of uniform conversion factors for use in statistical, research and service programs of USDA. All conversion factors included are based on the most recent and reliable information available and are intended to reflect current conditions and practices.

FARM POPULATION — ESTIMATES FOR 1964. Farm Population Branch, Economic and Statistical Analysis Division. ERS-233.

The population living on farms numbered about 12,954,000 in April 1964. Between April 1963 and 1964 an estimated 816,000 persons of all ages either moved away from farms or lived on places that were removed from the farm category during the year because agricultural production ceased.

### Consumer Hints

The U.S. Department of Agriculture has published its yearbook for 1965—a book to assist the consumer in both city and country.

It's the 496-page *Consumers All* yearbook, which gives helpful hints on just about everything the consumer buys. As Secretary of Agriculture Orville L. Freeman puts it, "This book presents practical results of the Department's efforts to make the lives of people healthier, happier, more fulfilling."

Subjects include food, clothing, houses and furnishings, managing money, caring for yards and gardens, improving communities and using leisure time.

The *Consumers All* yearbook is distributed mainly by members of Congress, each of whom has a number of copies for free distribution. Or it can be bought at \$2.75 from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

LONG-RUN PROJECTIONS OF FOOD PROCESSING AND MARKETING IN THE WEST. D. G. Stallings, Marketing Economics Division. AER-78.

Costs of production and transportation, growth of population and income, type and quality of product and seasonality of production are factors which may affect food production and marketing in western U.S. by 1985. (See August 1965 Farm Index).

AGRICULTURE IN THE SOUTHEAST ASIAN RICE BOWL AND ITS RELATION TO U. S. FARM EXPORTS. B. A. Chugg, Foreign Regional Analysis Division. FAER-26.

The Rice Bowl Region analyzed in this report consists of the following countries: Union of Burma, Cambodia, Laos, Republic of (South) Vietnam and Thailand. The region is notable for having exportable surpluses of several agricultural products, especially rice. The Rice Bowl countries produce about one-sixth of the Free World's rice supply but they account for almost two-thirds of the rice entering international trade; 85 per cent of all exports to the Far East. (See July 1965 Farm Index.)

### Numbers in parentheses at end of stories refer to sources listed below:

1. Feed Situation, FdS-207 (P); 2. E. J. Smith, Technology in Broiler Production: Impact on Feed Conversion and Marketing Weight, ERS-246 (P); 3. A. R. Gerlow and J. R. Campbell, Enterprise Costs and Returns for Beef Cattle, Southwestern Louisiana Rice Area, Agr. Expt. Sta. DAE Research Report No. 337 (P\*); 4. M. D. Skold, A. W. Epp and H. G. Hughes, Profit Maximizing Farm Plans for Farms in Southeastern Nebraska: By Type and Size of Farm, Nebr. Agr. Expt. Sta. Res. Bul. 219 (P\*); 5. W. R. Grant and T. Mullins, Adjustments on Rice Farms to Changing Conditions, Grand Prairie, Arkansas, Ark. Agr. Expt. Sta. Rpt. Ser. 134 (P\*); 6. W. R. Grant and T. Mullins, Adjusting to Changing Conditions on Rice Farms, Northeast Arkansas Rice Area, Ark. Agr. Expt. Sta. Rpt. Ser. 137 (P\*); 7. H. G. Sitler, Costs of Selected Sizes and Types of Farm Machinery on Colorado Wheat Farms, Colo. Agr. Expt. Sta. Unnumb. (P\*); 8. V. Hall, B. Bryan, W. Grant and T. Mullins (SM); 9. J. S. Crecink, Budgets for Major Farm Enterprises in the Clay Hills of Mississippi, Miss. Agr. Expt. Sta. (M); 10. Dairy Situation, DS-304 (P); 11. Milk Production and Dairy Products, Annual Statistical Summary, Da 3(65)(P); 12. B. M. Buxton (SM); 13. A. R. Bird, Alongside Labor Scarcity: What's the Problem and Solution—and Implications for Rural America? (S); 14. E. J. Moore, Improving Economic Opportunities by Investing in Education (S); 15. L. B. Perkinson, Fatal Accidents on Farms, ERS-245 (P); 16. L. E. Ott, Frozen Foods: Margins, Costs and Returns in Relation to Display Space, ERS-235 (P); 17. M. R. Godwin and W. T. Manley, Demand and Competitive Relationships for Florida and Greenhouse-Grown Tomatoes, Fla. Agr. Expt. Sta. Bul. AES-703 (P\*); 18. B. H. Wright, Transportation and the Grain Industries (S); 19. H. H. Harp and M. E. Miller, Convenience Foods: The Relationship Between Sales Volume and Selected Demand Factors, AER-81 (P); 20. Dairy Situation, DS-307 (P); 21. G. B. Rogers and L. C. Martin (SM); 22. W. E. Hendrix, Improving Agriculture in Less Developed Countries (M); 23. D. D. Steward, "Criteria for Production Versus Importation of

Fertilizers," Chapter IV, United Nations Manual on World Use of Fertilizer (M); 24. L. Moe, Ghana: Projected Level of Demand, Supply, and Imports of Farm Products in 1970 and 1975, With Implications for U. S. Agriculture (M); 25. D. H. Rahe, "U. S. Agricultural Exports in Fiscal Year 1964-65 Were a Record \$6.1 Billion for Second Consecutive Year," For. Agr. Trade, Aug.-Sept., 1965 (P); 26. Foreign Regional Analysis Division (SM); 27. Dairy Situation, DS-307 (P); 28. Wool Situation, TWS-71 (P); 29. E. C. Pape, Jr. and M. G. Van Dress, Estimated Number of Days' Supply of Food and Beverages in Retail Food Stores, 1963, MRR-713 (P); 30. R. C. Lifquist (SM); 31. 1964 Yearbook of Agriculture—Farmer's World, copies available from Superintendent of Documents, Government Printing Office, Washington, D. C. 20402, \$3 each (P); 32. F. D. Barlow and S. A. Libbin, World Grain Trade and Pricing Policies and Their Effects Upon International Trade (M); 33. W. R. Bailey (SM); 34. A. G. Schienbein, "Off-Farm Commercial Storage Facilities for Grain," Mktg. and Trans. Situa., MTS-158 (P); 35. W. L. Trock, Trends and Prospective Developments in the Organization and Functioning of the Grain Elevator System, Montana and North Dakota, Mont. Agr. Expt. Sta. Bul. 596 (P\*); 36. W. G. Heid, Jr., Grain Marketing—A General Description (S); 37. M. Clough, Challenges and Opportunities for Research in Marketing Feed Grains (S); 38. J. R. Corley, Changing Market Channels and Transportation Structure for Wheat (S); 39. B. H. Wright, Changes in Transportation Used by Country Grain Elevators in the North Central Region—1958-63, MRR-724 (P); 40. W. K. Trotter, Economic Outlook for Increased Industrial Use of Cereals (S); 41. & 42. National Food Situation, NFS-112 (P); 43. G. K. Bowles, The Hired Farm Working Force of 1964—A Statistical Report (M).

Speech (S); published report (P); unpublished manuscript (M); special material (SM); \* State publications may be obtained only by writing to the experiment station or university cited.



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### *Head Count for Hired Hands*

American farmers got their work done last year with the help of 3.4 million hired hands.

The number of casual workers on the farms—those doing less than 25 days of farm work for wages—dropped from 1.7 million in 1963 to 1.4 last year.

The number of other workers rose from 1.9 to 2.0 million. Part of these changes may result from the difference in survey methods used in 1963 and 1964.

About 70 per cent of all the hired workers were men or boys over 14. Half the workers were 25 or under.

Comparing figures for 1945-49 with 1960-64:

Unlike the steady decline in number of farm operators and unpaid family workers, the number of hired workers hasn't changed much.

There are more casual workers today than there were in the late 1940s, but about the same number of seasonal workers, a group that includes those who worked 25 to 149 days during the year.

Big drop—about 23 per cent—is in the number of regular and year-round wage workers on farms, the group that worked 150 or more days during the year.

As a group, the hired farm laborer worked an average of 80 days in 1964, earning about \$7.15 a day or \$578 for the year. The earnings include cash only, not the fringe benefits.

The average days of work and daily and yearly earnings were all higher in 1964 than the year before. (43)

# THE FARM INDEX

## CONTENTS

	page
THE FARM: <i>Formula Feeds: Sales by Season</i> —feed output follows animal marketing	5
RURAL LIFE: <i>Labor Market Failing to Meet</i> <i>Job Needs—problems for rural youths</i>	11
MARKETING: <i>Finding the Frozen Assets—</i> <i>how retailers can cut freezer costs</i>	13
THE FOREIGN MARKET: <i>Nations that Lead</i> <i>the Way—drive to succeed ups output</i>	16
SPECIAL GRAIN SUPPLEMENT: <i>U.S. and world</i> <i>production trends, marketing practices</i>	22

Numbers in parentheses at end of stories refer to sources listed at end of issue.

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